

THE HEALTH OF THE SCHOOL CHILD.

ANNUAL REPORT OF THE CHIEF MEDICAL
OFFICER OF THE BOARD OF EDUCATION FOR
THE YEAR 1922.



LONDON:

PRINTED & PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE

To be purchased through any Bookseller or directly from H.M. STATIONERY OFFICE
at the following addresses: Imperial House, Kingsway, London, W.C.2, and
28 Abingdon Street, London, S.W.1; York Street, Manchester;
1 St. Andrew's Crescent, Cardiff; or 120 George Street,
Edinburgh.

1923.

Price 1s. 6d. Net.

LB 3413

G6 A2

cop. 1



CONTENTS.

	PAGE
I.—INTRODUCTION AND GENERAL REVIEW	5
Medical inspection and treatment	6
Special schools for defective children	7
Parents' payments for medical treatment	8
Organisation of physical training	8
Meals for school children	10
Organisation	10
II.—THE SCHOOL MEDICAL SERVICE IN 1922	12
Introduction	12
Staff of the School Medical Service	13
Co-operation of parents, teachers, school attendance officers and voluntary organisations	13
Following-up	14
The pre-school child	19
Nursery Schools	21
School Medical Officers' Reports	26
School sanitation	26
The teaching of hygiene	27
Physical education	29
Open-air education	31
Cost of the School Medical Service	32
III.—FINDINGS OF MEDICAL INSPECTION	34
Uncleanliness	37
Vision	38
Squint in children	41
Tuberculosis	44
Institutional treatment...	46
Medical inspection in Secondary Schools	46
IV.—RESEARCH WORK IN SCHOOL MEDICAL SERVICE	50
V.—MEDICAL TREATMENT OF PUBLIC ELEMENTARY SCHOOL CHILDREN	60
School Clinics	61
Treatment at Hospitals	62
Minor ailments	63
Ringworm	64
Middle ear disease	65
Enlarged tonsils and adenoids	67
Stammering	69
VI.—THE SCHOOL CLINIC AND SCHOOL NURSING	72
(i) Functions of the Clinic	72
(ii) Staffing and equipment	75
(iii) School Clinic buildings	75
The School Nurse	78
VII.—DENTAL INSPECTION AND TREATMENT	81
Extent of dental defect	81
Preventive measures	84
Effective utilisation of dental services	85
VIII.—ORTHOPÆDICS AND THE CHILD	89
(1) The Hospital School	91
(2) The Orthopædic Clinic	96
(3) The Cripple School (day and residential)	98
(4) The remedial exercise Clinic	100
(5) Vocational courses	101

	PAGE
IX.—SPECIAL SCHOOLS FOR DEFECTIVE CHILDREN	103
Special Schools in London	104
Training of blind and other defective students over 16	105
X.—THE MENTALLY ABNORMAL CHILD	107
(i) The retarded child	107
(ii) The mentally defective child	111
Practical results	112
What is the duty of the Education Authority ?	113
XI.—PROVISION OF SCHOOL MEALS	117
Nutritional conditions	119
(i) Conditions during the war	120
(ii) Present conditions compared with the pre-war period	121
(iii) The effect of unemployment and financial depression	122
(iv) The effect of economical restriction of the provision of meals	123
XII.—PHYSICAL EFFICIENCY AND JUVENILE EMPLOYMENT	125
The present scheme for protecting health	125
Children employed out of school hours	126
Summary	129
Examination and preparation of the Leaver	130
Future work	131
APPENDICES :	
A.—List of Medical Officers ; number of children inspected during 1922 ; the medical treatment included in the schemes of Local Education Authorities, and a summary of these particulars	133
B.—Prosecutions by Local Education Authorities	147
C.—Mortality at several ages from all causes and from tuberculous diseases, 1907–1922	148
D.—Statistical Tables relating to the provision of meals... ..	150

ANNUAL REPORT
OF THE
CHIEF MEDICAL OFFICER, 1922.

TO THE RIGHT HON. EDWARD WOOD, M.P.,
President of the Board of Education.

SIR,

1. On grounds of economy I propose, as last year, to make a shorter report than that of previous years on the Special Services of Education which deal with the health and physical and mental development of school children, and on the auxiliary activities which are administered by the Medical Branch of the Board of Education.

I.

INTRODUCTION AND GENERAL REVIEW.

2. At first sight the year 1922 must have appeared to be a time of reaction and disappointed hopes to many of those who are interested in the health of the school child.

By a series of enactments Parliament had recently provided the Board and Local Education Authorities with a complete armoury of weapons for the warfare against disease and neglect amongst school children, an armoury which both the Board and the majority of the Authorities, with the full support of public opinion, were anxious and ready to use. It was unfortunate that this opportunity should have synchronised with the overriding need for financial restrictions and that many of the developments proposed in recent legislation should have been arrested, temporarily at least, almost at their birth.

3. There was, however, no real reaction in 1922. No doubt the machinery which Local Education Authorities had laboriously and carefully built up in previous years was denied expansion, but it was not seriously damaged, and in the country as a whole it was not appreciably slowed down. It remains intact and ready for increased output directly circumstances permit. The form and the direction of its future development are for the consideration of the Board and of Authorities. We have arrived at a period when the somewhat sporadic and pioneer advances of the past, legitimate and necessary enough in the circumstances, must give way to an orderly, comprehensive, well-balanced and national scheme. Ten years ago the only statutory obligations on Local Education Authorities in connection with medical services were to provide medical inspection for children in Elementary Schools, and to secure appropriate education for the blind and deaf. Special Schools for mentally and physically defective children, and medical treatment for children in Elementary Schools were purely optional, and the power to extend medical inspection and treatment beyond the walls of the Elementary School did not exist. Since then there has been profound development. The Elementary Education (Defective and

Epileptic Children) Act, 1914, imposed on Authorities the obligation to provide for mentally defective children; the Education Act, 1918, extended this obligation to physically defective children, imposed on Authorities the duty to provide medical treatment in Elementary Schools, and extended the working of the School Medical Service to Secondary Schools and other places of Higher Education. There now rests, therefore, upon every Authority in the country a statutory obligation to make comprehensive provision for all its abnormal children.

4. It is at once obvious that this great national work cannot be achieved in a day. In the areas of the more enlightened Authorities the ground has been already covered, but in the country as a whole the arrears are serious, as the figures given in my previous reports have shown. Though nearly all Authorities now provide or adopt some form of medical treatment, there are still many gaps to be filled, while, as regards "defective" children, the available accommodation in Special Schools is inadequate, and in many areas is non-existent. The problem, therefore, is a formidable one, and its solution must no doubt be gradual and appropriate to financial possibilities. The time has gone by, however, for spasmodic effort, first in this direction and then in that, according to the immediate needs of the area. Progress, even if slow, should be orderly, and local efforts can only be expedient and wise in so far as they may be regarded as necessary and integral instalments of a comprehensive and economical scheme for the country as a whole.

5. The scope of *medical inspection and treatment* is by now generally understood, and it only remains for backward Authorities to bring their local service into line with the standard of the best areas. The experience of the last fifteen years has made fairly clear the sound way to organise this Service. The number of defects found in school children, the staff needed to deal with them, and the cost of an efficient service are all known. Moreover, it is known that this cost is by no means prohibitive, and that the School Medical Service of the country could be raised to a good general level without serious difficulty, even in times of financial stringency.

6. The temporary pause in the expansion of the work will not have been an unmixed disadvantage if it induces all those who are concerned in it to consider very carefully the lines on which these Services can be most profitably developed in the future. The gross inequalities which exist between various areas should be gradually reduced, so that in the near future at least a minimum standard shall be obtained in all districts, and that the children of no area shall be wholly deprived of the benefits which Parliament intended them to enjoy. This is largely a matter for the co-ordinating activity of the Board. The part of Authorities themselves is to estimate carefully the needs of their areas, to weigh the competing claims of different types of children, and to plan the progressive measures by which in due course the whole of those claims will be met. The general procedure to be followed by the Board in the future development of this work has been the paramount subject under the consideration of the Medical Branch of the Board during the last year. It is one which can confidently be commended also to the consideration of Authorities, in view of the obligations now imposed upon them by statute and of the need for having a policy for execution directly circumstances permit.

7. In the case of the provision of *Special Schools for defective children*, however, the circumstances are very different. In the first place, the actual number and exact condition of such children is not known with any certainty. It is true that we possess returns from all Authorities showing the number of ascertained "exceptional" children in their areas. But a careful scrutiny of these returns reveals discrepancies which are so serious that it is difficult to frame national estimates upon them. These discrepancies are due to two main causes. In some cases there is no doubt that for one reason or another Authorities have not made sufficiently thorough enquiries to ascertain what children in their areas were abnormal; in others the results have differed so widely that it is clear that quite irreconcilable standards of abnormality have been adopted in different localities, or ascertainment has been restricted by the prevailing degree of accommodation for defective children. It is of the first importance that we should secure more accurate returns of the real nature of the problem, and we are now taking steps to achieve this object. We hope this year to obtain from Authorities figures based on more accurate definition, and by special investigation of the facts in areas which show abnormal results to get reliable data as to the size and character of the problem.

8. Secondly, the Special School provision differs widely from that of the School Medical Service, in that it is inevitably very costly. It costs on an average about £30 a year to educate a child in a Day Special School and about £90 in a Residential School, as compared with about £12 in a Public Elementary School. It is obvious that to make provision at this rate for every child who needs it will be an expensive undertaking and one that at best must take some years to achieve. It is all the more important that every new proposal should be considered in the light of the problem as a whole, and approved or rejected according to the value of its contribution towards a final comprehensive scheme.

Thirdly, our knowledge of the causes of these fundamental defects is continually growing and our means and methods of prevention and treatment extending and becoming differentiated. It must be admitted, however, that in respect of mental defect we are still far from universally accepted and reliable standards.

9. The great cost of Special Schools is the one serious obstacle in the way of their expansion. It was natural and proper, therefore, that the Board should consider every legitimate means of reducing this cost in order to make future developments more feasible. With this object they issued Circular 1297, which dealt with the staffing of these schools. The object of this Circular was explained in the opening paragraph.

"The high cost of Special Schools has had the inevitable effect of restricting their provision and in present circumstances has prevented even their normal expansion. Although the Board do not disparage the ideals which have been pursued in the conduct of the best of these schools, they have been forced to the conclusion that some compromise with these ideals is necessary if, within a reasonable time, adequate provision of schools is to be made for the children who require the special forms of education which they offer, and that the balance of advantage lies on the side of making less costly arrangements for greater numbers. It is only by reducing the cost of the schools to the lowest figure compatible with efficiency that the Board can hope, with the co-operation of Education Authorities and Managers, to attain within a reasonable time a position in which no child shall, through lack of accommodation, be denied the benefits to which he has a claim."

The Board's new proposals for the staffing of these Special Schools have led to some considerable misgiving on the part of many of those who are concerned with their administration. It is admittedly difficult to balance the claims of the children who are already inside the schools and the much larger number who are outside. Some practical compromise is inevitable, and I do not believe that the proposals of the Circular, carefully safeguarded as they are by a guarantee that they will be applied not in a rigid and inelastic way but with due regard to all the circumstances of each individual school, should cause any appreciable injury to the ultimate efficiency of the schools. Certainly, nothing could be further from the wishes of the Board, and the effect of the Circular will be jealously watched by the Board's Medical Officers, in order that any falling off in the quality of the schools may be immediately reported and brought to the Board's notice.

Closely akin to this question of the "Special School" child is the still larger problem of the mentally retarded child, who is not only debarred from benefiting by the education provided for it, but furnishes so large a bulk of the criminal, delinquent or unemployable classes. I have discussed this matter fully in a subsequent section of the present report (page 107).

10. Another matter which has equally given rise to some general apprehension is the action of the Board in connection with *parents' payments for medical treatment* of their children. In the past, the practice of Authorities in this matter has varied greatly. Many of them have consistently made charges in appropriate cases from the time when they first began to provide treatment. Others have made charges for some forms of treatment and not for others. Lastly, some Authorities have consistently made no charges at all for any treatment, even in cases where the parents could afford to pay for it. In view of the terms of Section 81 (1) of the Education Act, 1921, and of Article 7 of Grant Regulations No. 1, which impose on the Board an obligation to satisfy themselves that Authorities are complying with the Education Acts, there was no option but to take steps to remedy these irregularities and inequalities as soon as possible. We have endeavoured to carry out the obligations imposed by statute with as little inconvenience to Authorities as possible, and to leave to Authorities all the discretion secured to them by the Act so long as they could show that they were complying with the spirit of the Act in a reasonable way. In any case, it is right to confine free treatment to the necessitous, to relieve pressure on the rates and taxes, and to arrange for the parent to contribute what he can to the medical care of his child. It is as yet too early to report on the result of the new practice. There is no doubt that in areas where treatment has always been free a considerable falling off in the children's attendances may at first result from the application of a fee. The attendances, however, in areas where a fee has always been charged show that a small charge is not necessarily a deterrent, and it is anticipated that, as parents become accustomed to the system in areas where it is new, no permanent diminution of the children's attendances will be caused. It has never been suggested, of course, that any child should be deprived of treatment on account of its parents' inability to pay for it.

11. It is pleasant to refer to an activity which, even in these difficult times, the Board have been able to encourage, namely, *the organisation of Physical Training*. Both in Circular 1269 and in Circular 1291 the

Board called the special attention of Authorities to the value of an efficient system of physical training in Public Elementary Schools. As these Circulars pointed out—

“such a system is a potent auxiliary in the prevention of debility and disease amongst school children and is relatively inexpensive to maintain. The small expenditure involved, even in a large area, forms but a fraction of the cost which most Authorities willingly pay for their School Medical Service and the care of defective children, and it is reasonable to anticipate that if it is properly developed it will gradually afford relief from some of the heavy expenditure on other ‘special services.’ It is because experience has shown the real economy of prevention as compared with the expense of cure, that the Board have asked Authorities to explore every other avenue of economy so as to be able, even in existing circumstances, to retain or appoint organisers of physical training.

“Besides this aspect of physical training as a means of preventing debility and promoting health and normal physical development, it must be remembered that it has also a direct and extremely important part to play in the general education of the child; it is conducive to discipline, self-control and concentration, a sense of order and responsibility, co-operation with others and generally to the formation of good habits.”

12. In order to assist Authorities in organising this service on effective and economical lines, the Board have brought to the notice of Authorities the experience gained during the last few years. The fundamental points are two. The first is that if all children in Public Elementary Schools are to receive systematic and regular training in Physical Exercises such training must be carried out by the class teachers. The second is that, in order that the class teachers may keep themselves at a high level of efficiency in this subject, they should have, from time to time, the special and individual assistance and guidance of experts. The work of the last few years has established the soundness of this position. Generally speaking, school teachers have proved their competence to take their classes in physical exercises, and have shown that it is not necessary to employ specialist instructors in order to do justice to the children. On the other hand, it is equally clear that even the best and keenest teachers have derived great advantage and encouragement both from the advice and demonstrations given by expert organisers in their schools, and from the classes held for teachers by such experts. There is no doubt that in areas where a really competent organiser has obtained the confidence and co-operation of the teachers there has been immense improvement, not merely in the way in which the children have performed their exercises, but also in the health, discipline and alertness of the children as a whole. Dr. Wheatley, the County Medical Officer for *Shropshire*, says that :—

“The outstanding want is still a comprehensive scheme for physical instruction and training. This is preventive work of a radical type. It not only prevents deformities, but it improves the health and physique of the great mass of school children. Upon sufficient exercise of the proper kind, conducted in the open air with due regard to the amount and kind of clothing, depends not only a good growth of the muscles and frame, but also the development of normal functions of the organs, an efficient heart, a freely moveable chest, good abdominal development, a good appetite, prompt riddance of waste produce, and a healthy condition of the mucous membranes and skin.

“Exercise and fresh air conditions and proper food are the two primary factors that govern growth and health, and by attention to these two matters we strike at the root of disease. Measures directed to the prevention of particular diseases or to the early treatment of disease, although important, can never yield the same result to the State, consequently it is essential that we should concentrate our energies more particularly on these general measures, which are essential for the full growth and vitality of the great mass of school children. Of these measures, the provision of a good scheme of physical instruction including the encouragement of organised games and the provision of playing fields, is perhaps the most important.”

13. There are unfortunately several practical difficulties in the way of appointments of Physical Training Organisers. Such persons are officials, not teachers, and many Authorities naturally hesitate at the present time to appoint new officers. Further, the number of trained persons competent to take these important posts is not large, and the fact that organisers' work is not recognised service for the purpose of the Teachers' Superannuation Act is sometimes a deterrent to suitable candidates, who might otherwise come forward. These obstacles, however, have already been surmounted successfully in many areas, and it is to be hoped that the further expansion of this exceptionally valuable service may not be long delayed.

14. I regret very much the closing of the Course of Physical Training which was started some four years ago as a branch of the Sheffield Training College. Acting on the invitation of the Board, the Local Education Authority for Sheffield undertook this arduous piece of work in the national interest, and during the last few years have turned out some admirable teachers and organisers. It has most unfortunately been found necessary, on financial grounds, to bring the Course to an end. I am glad to have this opportunity of bearing witness to the value of the work which has been done, and to the public spirit of the local promoters of the enterprise.

15. Another subject which engrossed much attention during the year 1922 was the limitation of the expenditure of Authorities on *Meals for school children*, in view of the abnormal growth of that expenditure after the coal stoppage in the spring and summer of 1921. From the medical point of view, the most important aspect of this question was its effect on the health of school children in areas where the effects of unemployment were most acutely felt. It is not easy to dogmatize on a subject of this sort, where it is difficult to disentangle one particular factor and estimate its effect. As a result, however, of careful enquiries made by School Medical Officers in a certain number of typical areas, I am satisfied that, generally speaking, and in spite of unemployment, the nutrition of school children was not below the pre-war standard, and, in fact, in some cases was appreciably higher. The subject is dealt with in a subsequent section of the present report.

16. In the introduction to my report last year I dealt so fully with questions of *organisation* that I need not here further pursue the matter. I can only invite Authorities to be good enough to refer to that report if they are in any doubt both as to the scientific grounds of their work and as to the directions in which progress is required. Apart from the

subjects to which I have already referred, I think the most urgent questions awaiting solution in many educational areas are—

- (a) the further co-ordination of the school medical work with the public health service.
- (b) the physical condition of children under five,
- (c) the effective education of the dull or backward child,
- (d) the importance of a comprehensive scheme for the treatment of dental defects, and
- (e) the systematic organisation of the teaching of hygiene and physical training.

These subjects are referred to in detail in the present report, and I need not dwell upon them here. Their solution will not, I think, be found in any narrow attempts to deal with each of them separately or as a problem by itself. They are all inter-related and inter-dependent; and their solution is contingent upon co-operative and conjoint action of the several Committees and Authorities within the boundaries of each area. After all, they are problems within the compass of the area. In most cases one Medical Officer of Health presides over the public medical service of the area, and his staff should be utilised in the most economic and effective way, in order to solve the difficulties with which he is faced. It may be perfectly true that our system of local government in England is anomalous, and to some extent overlapping. But it is the result of a historical growth, and has much to commend it as a practical means for getting the work properly done. The poor law medical service, the public health system, factory control, the school medical service, and the maternity and infant welfare movement have all emerged during a hundred years in response to the needs of the situation and the aspirations of the people. To amalgamate these great public services under one Ministry centrally, and under one Authority locally, would not necessarily conduce to the resolution of difficulties which are inherent in the nature of the case. I hesitate again to use the convenient word "co-ordination," but I am satisfied that, however inadequate be the term, close and carefully considered co-ordination, both central and local, is, at least for the present, the best method of securing the results which we all desire. Unprecedented progress has been made during the last 16 years in the whole subject of child welfare, and, whatever be the anomalies, we cannot go far wrong in believing that what has proved good in the past will also prove beneficial in the future.

II.

THE SCHOOL MEDICAL SERVICE IN 1922.

Introduction.

17. The record for 1922 of the School Medical Service, sixteen years after its inception on the passing of the Education (Administrative Provisions) Act in 1907, shows that the foundations laid by Local Education Authorities throughout England and Wales of a definite health policy in regard to the school children under their charge and administration were in the main adequate and sound. The Schemes of the Authorities were not altogether on uniform lines, but from the first they all included the routine medical inspection of certain age groups of children. The first duty imposed by Parliament on Authorities was to provide for the medical inspection at definite periods of school life of all children, ailing or healthy, in attendance at Public Elementary Schools. To this duty was added the power to make arrangements for attending to the health and physical condition of children educated in Public Elementary Schools. This power was converted into a duty on the passing into law of the Education Act, 1918, and was incorporated in the Education Act, 1921.

18. The specific requirements of the Board as to medical inspection of the children in the schools are set out in Article 58 of the Elementary Education Provisional Code, 1919, and are as follows :—

(a) Arrangements must be made so far as practicable for carrying out the work of medical inspection in the school premises, and the Managers shall give such reasonable facilities as are required by the Local Education Authority for the purpose.

(b) The Board must be satisfied that provision has been made for the medical inspection of *all* children admitted to the school in the year ending on the 31st March, and of all children between 12 and 13 years of age, together with children over 13 years of age, who have not already been examined after reaching the age of 12. The Board will also require to be satisfied that provision has been made for the medical inspection of all children between 8 and 9 years of age.

Under this Article no fewer than 1,751,122 children were subjected to routine medical inspection during 1922, and to this number must be added 635,628 children who were examined as "special" cases. These are cases of children not due normally for routine medical inspection, but who are considered by parents, teachers, members of care committees, etc., to show signs of physical or mental defect, and consequently to be in need of special medical inspection. Thus it will be seen that of the 5,180,589 children in average attendance at the Elementary Schools during 1922, no less than 2,386,750, or 46 per cent., were medically inspected during the year.

19. The scope of the School Medical Service, though based upon a system of medical inspection and treatment, now comprises the teaching of hygiene and physical training, nursery schools, school clinics (medical, surgical, dental), special schools for physically and mentally defective children, the provision of school meals, and the determination of fitness for employment. These subjects are dealt with in the present Report.

Staff of the School Medical Service.

20. Some particulars of the medical staff of the School Medical Service, both centrally and locally, are given in Appendix A. It will be seen from Table III that the total number of School Medical Officers, assistant medical officers and medical, surgical or dental specialists employed during the year was 2,162. Of these upwards of 1,150 were private practitioners who undertook the work of medical inspection or medical treatment, or both, of school children under arrangements made by the 317 Local Education Authorities. This figure includes neither (a) private medical practitioners engaged at hospitals to which children are sent (with or without contribution from the Authority), nor (b) practitioners to whom children needing treatment are first referred. The rule is that all children requiring medical treatment shall in the first instance be referred to a private practitioner. If he is not available, or is unwilling to deal with a particular case, it is sent to the School Clinic or if necessary to hospital. Of the 2,162 medical officers and dentists (a) 571 were also medical officers of health or assistant medical officers of health, and (b) 226 were women doctors or dentists working in 123 different education areas.

21. A total of 4,135 School Nurses (including Nurses employed by Nursing Associations), whole or part-time, were employed in 315 out of the 317 education areas. Their work consists, under the direction of the School Medical Officer, in attendance at the medical inspections and at the treatment clinics, in cleanliness surveys in the schools, in following-up in their homes children found with defects, and in the nursing treatment of cases of minor ailment.

Co-operation of Parents, Teachers, School Attendance Officers, and Voluntary Organisations.

22. The co-operation of *parents* is being steadily cultivated in every possible way. Very few parents now object to school medical inspection, and in the great majority of cases it is welcomed. They are notified in advance of the inspection of their children and are invited to attend; they are becoming more and more intimately concerned in the manifold forms of treatment and amelioration; they are learning that the home is after all the centre of true and enduring improvement and that the school is a valuable agency at their service in securing the welfare of their children; they are contributing to the cost. The School Medical Officers report the increased attendance of parents with their children at the school clinics. Obviously such attendance differs in town and country, it differs also for entrants and leavers; it is naturally greater in the towns and for children at their first inspection. In a number of towns and for entrants it reaches 70 and 80 per cent., and even in rural districts there are signs of a rising percentage, and this is one of the evidences of a growing sense of responsibility.

“ From the reports of the School Medical Inspectors and Dentists,” writes Dr. Kaye (*Yorks W.R.*) “ one statement comes with startling unanimity. The Head Teachers’ interest is the cardinal necessity of successful work. If the Head Teacher identifies himself with the aim of school medical inspection its success is assured. On the other hand, if his interest is lukewarm or non-existent, school inspection is not half as successful as it might be. In the former case the cards are well

prepared, the parents invited, the special cases selected with care, the inspection is *felt* to be successful, the actual work is more enjoyable, and the teacher being interested in the results, is able to help the parents considerably. The reverse of the picture need not be painted, because it is the exception." This tribute to the work of the *Teachers* is well deserved, for their contribution to the activities of the School Medical Service has increased substantially with the years. They demonstrate daily in a practical way their recognition of the fact that the School Medical Service is an integral factor of the public scheme of education. Their actual work often includes the weighing and taking measurements of the children, the preliminary testing of vision, and the following-up of cases of defect. They exert a primary influence with parents in securing adequate attention to incipient or established physical defects in their children.

23. The numerous references in the reports of the School Medical Officers to the work of the *School Attendance Officers* indicate the growing co-ordination between the activities of the School Medical and School Attendance Departments. The closer the relationship the more successful and complete is the work accomplished. The immediate results are to be seen in a better attendance at the medical inspections and at the treatment clinics, and an improved "following-up" of cases of defect consequent on the fact that the work of School Attendance Officers takes them to the homes of the children which secures for the School Medical Department first-hand information on the home conditions of the children.

24. The most important *Local Voluntary Organisation* in connection with the School Medical Service is the Children's Care Committee. Such valuable committees are at work in a number of areas including London, Birmingham, Somerset and Surrey. Their activities include (a) the visitation of the homes of the children to facilitate the treatment of defects discovered at the medical inspections, (b) arrangements for the after-care, occupation and welfare of children leaving or about to leave school, (c) the provision, in some cases, of boots, clothing, surgical instruments, etc., to necessitous children, and (d) the provision of facilities from voluntary or other sources to meet special needs of ailing or convalescent children, *e.g.*, letters for convalescent homes, etc. Other organisations, non-local in character, which contribute with excellent result to the work of the School Medical Service are the Invalid Children's Aid Association, the National Society for the Prevention of Cruelty to Children, the Fresh Air Fund and the Children's Country Holiday Fund.

Following-up.

25. I am doubtful if the Local Authorities appreciate at its proper value the immense services of these voluntary agencies engaged in "following-up" the school child in need of public assistance, guidance and counsel in respect of its physical condition. Much is done by the School Nurse in this sphere, but owing to her other nursing duties and owing to her office she is unable to undertake the heavier portion of this burden. It is, in fact, undertaken by the Care Committees and many devoted voluntary workers and visitors in all parts of the country. Their service is absolutely invaluable, and it is warmly appreciated by countless

families in their time of domestic anxiety and distress. Sir William Hamer (*London*), after recording that 77·7 per cent. of the children needing treatment received it within a year, says that—

“The service is indebted to the children’s care organisation and the numerous voluntary workers connected with it for their unstinting efforts at following-up the cases. Ignorance and apathy on the part of the parents are still the chief hindrances to fully successful work. The Society for Prevention of Cruelty to Children gives very valuable assistance in dealing with intractable cases of neglect. In the annual report of the Society for 1921-22 special attention is drawn to the activities of the London Medical Branch which dealt with 804 children. The Society’s ambulance has proved of considerable assistance in conveying children for treatment who otherwise would fail to obtain it.

“Very encouraging is the growing appreciation on the part of the hospitals of the aid which is available through the school care organisation in the following-up and ancillary treatment necessary for the cure of their child patients.

“A special arrangement exists in the case of Guy’s Hospital by which assistant organisers of children’s care work attend in the ear, nose and throat, orthopaedic, eye and skin departments, to follow-up the children attending the elementary schools, and to help to obtain their regular attendance.” (6,230 children attended these departments in 1922 and were followed-up.)

26. But mere figures and hospital returns do not give us an understanding of the patience and labour involved in this public service of following-up and after-care of school children. I am able, however, to quote at some length from a deeply interesting and instructive human document which has reached me from the pen of one of the most competent and experienced public officers now working in the service of London children. It was prepared in response to my request for a report on the “following-up” of 100 sick children over a period of ten years. I commend its study to all concerned.

“Statistical tables prepared year by year show in bulk the benefit which the institution of the School Medical Service has bestowed upon the child population. We are able to see that the condition of the children in 1923 is better in regard to physique, health and cleanliness than it was in 1913. Comparative measurements of groups of children confirm the results arrived at through the examinations by the school doctors. The report for 1905 of the Medical Officer of the School Board for London contains the figures of the first careful weighings and measurements made of children in elementary schools in London. The schools in which these measurements were made are recorded. The most recent routine weighing and measurement of the children of these same schools have been taken out this month (May, 1923), and it is found that for instance in boys of 8 years, although the average height has increased in a slight degree—a little less than half-an-inch—the average weight has increased 3½ pounds. Here is incontrovertible evidence to support the statement of the school doctors that the *nutrition* of the children is now much better than it was in pre-war years. Again the records of dental conditions show great improvement; in 1922 fifteen per cent. more of the London children leaving school have sounder teeth than did their predecessors of 1913.

“Illuminating as these figures are, however, they fail to give any hint of the ways and means by which these results have been obtained. It has, therefore, been suggested that a study should be made of the school medical history of 100 children now about to leave school. This seemed a comparatively simple and easy task, but it turned out to be complicated and arduous. The case papers of one hundred leavers were

sent for consideration; the mere reading and unravelling alone of the cases was an undertaking, so full of incident and detail are the stories contained in them.

"To give in a report a true picture of the difficulties met with by the care committee workers and the way in which these difficulties are surmounted and to preserve the moving human interest recorded in these papers is impossible.

Becky Goodman, 5 years to 9.

1914-1922.

"Take for example the very first file of case papers that comes to hand. Page after page of closely written documents gives the school history of little Becky Goodman. Not always easy to decipher, these entries by anonymous and voluntary workers. The handwriting changes from time to time as one worker gives way and the 'case' is carried on by another. But the story is continued, it grips and enthrals, it becomes a veritable saga. Becky Goodman's history in these papers begins with her entrant medical inspection at the age of 5 at Chicksand Street School on the 21st of May, 1914. The school doctor reported, 'defective teeth, sub-normal nutrition, milk to be given.' 'Pale and heavy-eyed' is the description given later by the care visitor. The head teacher puts the child upon milk and Mrs. Goodman is to pay 3 $\frac{3}{4}$ d. a week. Two months later it is reported that the 'mother prefers to give milk at home.' No more is heard of the case until the following year. On the first of September, 1915, the report is made, 'Most delicate; father hawker; father complains mother unkind to the children, especially Becky. Mother complains of the father's ill-treatment to her. Needs observation. Child not allowed to go to bed until 11; waiting until father makes bed with whom she sleeps.' No wonder little Becky is 'heavy-eyed.' Milk is again being given to Becky in school as an urgency matter.

"Now we are introduced to the family by Form No. C.C.41C. The father is Reuben; he is a fruit hawker aged 55 (his age increases normally year by year as the story unfolds. The mother is Leah, aged 45 (she remains constantly at 45 throughout the story!). There is a son of Leah's by a former husband named Jacob whose age is 19. Then comes Becky now aged 6, little Hyman aged 4, and Annie aged 8 months. Reuben and Leah have been married 14 years, there have been children older than Becky, all of whom are dead. Reuben is a dissolute reprobate, but suffers from his chest and is attending hospital. The shadow of tuberculosis is thrown heavily across the home. The income is hard to get at. Jacob is the mainstay of the family giving 18s. a week. Reuben drinks and squanders what he earns and cannot be counted upon for more than 3s. or 4s. a week. Leah has been to the Jewish Association for the Protection of Girls and Women, whose inspector visits and finds there the inspector of the Society for Prevention of Cruelty to Children. The facts are that Leah is a good mother but ill-treated by Reuben, who behaves like a madman. The question of sleeping arrangements is discussed. Jacob objects to the disgrace brought upon the family by the publicity; he protests against Becky sleeping in Reuben's bed. There is a homeric battle between Jacob and Reuben; one can imagine the terrified little Becky, Hyman and Annie staring in the night while the struggle between the men takes place. Poor Leah gets her head cut open in attempting to part them. Jacob is to be prosecuted by Reuben but disappears. This is a great misfortune as he was steady, reliable and the real support of the home. (It later transpired that he joined up and was in the Navy). The Special Officer (of the Attendance department) reports, 'Becky now sleeps with her mother; parents have always lived this cat and dog life and will continue to do so. No outside agency is likely to be of any avail. Mother asks for meals.' The family is now in dire straits and the children are kept alive by school feeding. Becky continues to have milk in school.

"In 1916 the school doctor finds Becky anæmic, orders milk to be continued, also her vision is defective. The care visitor says that Becky about this time looks very ill, very thin, has a bad cough and does not eat anything. Leah is persuaded to take her to the London Hospital and afterwards to the Dispensary for prevention of tuberculosis, where she remains for a time under treatment.

"After the fight with Jacob, Reuben appears to have behaved rather better, although dissolute still, there appears to be some good in him. He is clearly in a maudlin way fond of the children; the complaints about him are that he wakes the children up on his return home in the early hours of the morning (2 a.m.!) and insists upon feeding them upon the remains of fruit which he has not sold. We see him too wandering from hospital to hospital with Becky and shaking his head reiterating that only sending her to the country would save her.

"In 1917 Becky has left Chicksand Street and is now at the Jews' Free School. Here the care committee decide that Becky 'who is a delicate child attending the (tuberculosis) dispensary,' shall continue to have milk and dinners. Leah and Reuben are living a 'cat and dog life.' The tuberculosis dispensary from time to time asks the care committee to secure the re-attendance of Becky. This year the school doctor points out how Becky's vision has deteriorated but the threat of phthisis appears to be held in check. Attention is also being drawn to Becky's defective teeth by the school dentist.

"At the beginning of 1918 we find Becky being supplied with boots and little Hyman's boots being mended by the school cobbler, a small weekly sum being asked from Leah in payment. The question of treatment for Becky's teeth and dimness of vision is being prosecuted when an aeroplane raid takes place. This is early in 1918, and the home is totally destroyed by a bomb.

"The wretched Reuben, we are told in March, was so affected that he shouts much at night and the children cannot sleep.

"The Mutual Registrar of Assistance reports that the National Relief Fund helped in compensation for the damage caused by the raid. Curiously enough this appears to be the turning point in the family's fortunes. Leah gets hold of the compensation money herself. She sets up a little shop and turns to account a special gift she has for pickling cucumbers. In September Leah comes up to school demanding to pay full price for Becky's milk; she does not want charity when she can earn a living. The question of Becky's eyesight is now pressed in earnest. Leah thinks this unnecessary but after some pressure glasses are obtained; 8s. 1d. in the school bank is to go towards the cost. (The high cost of spectacles was at this time a great trouble).

"In January, 1919, Becky is taken off school milk; she no longer needs it. She is also discharged from the tuberculosis dispensary. Both this year and the next Becky is subscribing to the Children's Country Holiday Fund.

"In 1920 the family is again in low water and Becky is again on milk and Reuben is dying of phthisis.

"In 1921 the dissolute Reuben, now 61, dies, and Leah who has remained at 45 is relieved at last of the continual bickering and constant drain. Poor Reuben! How far the drink was due to the tuberculosis or the tuberculosis due to the drink can never be known.

"The question of Becky's teeth is still outstanding. Originally, at the age of 5, the school doctor drew attention to the decay, but one catastrophe after another has made other things seem more urgent. Now, however, the school medical service is determined that Becky shall no longer suffer in this way.

"In November the message comes, 'Kindly urge parent to consent to dental treatment; vouchers will be necessary and can be obtained for any day except Saturday.'

"In December Leah says she cannot get Becky to go for dental treatment, and then says being a widow she cannot get away from her shop. There is evidently going to be much resistance to be overcome in getting Becky's teeth done.

"In February, 1922, the school doctor is again pointing out Becky's bad teeth, and says pressure must be applied. But Becky is not attending school. Visits are made and it is found that another catastrophe has occurred. Leah is ill and Becky has to mind the 'shop.' The question of help to look after Leah is raised so that Becky can go to school; various possibilities are explored. The Jewish Board of Guardians are giving assistance. They suggest a woman who turns up, whereupon Leah makes a quick recovery. The Jewish Board of Guardians gives a loan of £5 to replenish the stock.

"Becky is spoken to many times but refuses to go for treatment; this is the real trouble; Homeric contests, Zeppelins, Gothas, bombs are one thing, the dentist's chair is another, and Becky has made up her mind she will not face it. Leah is threatened with prosecution by the Special Officer, but she says she cannot help it, she cannot make Becky go, the Council can do what they like, she washes her hands of it. In March it is decided that Becky cannot have her Country Holiday unless her teeth are treated. In May the Special Officer delivers a voucher; this is again wasted. It looks like a case for the N.S.P.C.C. The school doctor is asked and gives the necessary certificate for 'decayed and septic teeth.' The N.S.P.C.C. inspector in July calls and finds Becky 'highly nervous' and is therefore arranging for a lady inspector to take her to the dental treatment centre.

"With this support Becky's terrors are overcome and on the 26th July, Form M.T. 41 shows that Becky has finally been discharged from the London Hospital with her teeth properly attended to just in time to secure her Country Holiday. No further entries occur in the case papers. Thus the long history ends upon a note of success.

"The story of Becky Goodman here baldly told, although many of the details are squalid, is one which illustrates vividly the difficulties encountered by the School Medical Service in its work of safeguarding the health of the children. It reveals the school care organisation as a minor providence continually watching over the lives of the children and it especially illustrates the way in which agencies from the Jewish Board of Guardians to the National Society for Prevention of Cruelty to Children and not forgetting the school cobbler, are banded together and brought in to help.

"Who can doubt that little Becky owes her life to the watchful care devoted to her in its many vicissitudes?

"Special enquiries have been made for this report and we find that Leah is a wonderful woman, very prosperous at present, offering on the end of a fork her pickled gherkins for her visitors' delectation. Jacob is doing well in America. Becky won the obstacle race at the recent school sports, but is unfortunately for the moment laid up by an accident, for hers is an adventurous disposition. Although Becky's upbringing has not been all that it should be, there is no doubt that Leah's influence is entirely good and Becky evidently does not lack character.

"To have had experiences is nothing,
But out of all experiences,
To have rescued a good heart—
Everything."

[Here follow brief reports of other cases out of the 100.]

"Summing up the whole of the 100 cases it is found that dental treatment was required in 75, and obtained in 64, leaving 11 failures; spectacles were necessary for defective vision in 48 and obtained in all but one; treatment for the throat and nose (tonsils and adenoids) in 25, with two failures; attention for ear discharge and deafness in nine,

all of whom obtained treatment, though in one or two instances, intermittently and not wholly satisfactory; convalescence was obtained in 15 cases, often with the most satisfactory and permanent results; the great assistance of the Council's camp schools at Margate and Bushey is very apparent; school feeding at times was necessary in 32 instances, amongst the hundred cases; treatment for other miscellaneous defects was obtained in 54 cases, ranging from minor skin diseases to spinal curvature, hernia and tuberculosis.

"The amount of work entailed in these one hundred cases, it is easily seen, is very considerable; the whole amount of work carried out for the London school children, when it is remembered that some 200,000 children are medically or dentally treated annually, can be imagined.

"In the great majority of instances, the final results are eminently satisfactory, and the children are launched into industrial life with their physical constitution fortified to meet its strain and stress."

The Pre-School Child.

27. The experience gained in sixteen years' working of the School Medical Service has thrown into relief the importance of securing and maintaining the health of young children prior to their entry into school. The problem may be stated shortly in these terms. It may be safely assumed that from 80-90 per cent. of children are born healthy and with the potentiality of leading normal and healthy lives. Whatever be the facts of parentage, the tendency of nature is to reassert the right of each new generation to the heritage of healthy birth. The object of the measures adopted for Infant Welfare is to maintain that endowment of good birth, and herein lies the importance of the work of the local Health Authorities, acting in conjunction with voluntary agencies on behalf of the new-born child. This work increases from year to year, yet, comprehensive as it has become in recent years, the close supervision of the infant extends but little beyond the first year. There are, no doubt, adequate reasons to account for the limited supervision of the infant during pre-school life, such as the absence of compulsion on the parent to bring the child up to the centre, the difficulty in an increasing family of bringing up the elder babies together with the younger infants, who demand more immediate attention, and, lastly, the present financial position, which entails strict economy in regard to staff and remedial measures.

28. The fact is that after the first year of life the young child has to bear a heavy burden of environmental neglect, associated with bad housing, poverty, and absence of hygienic supervision. As a result, the School Medical Service is faced with the hard issue that, out of an infant population born healthy, *35 to 40 per cent. of the children who are admitted to school at 5 years of age bear with them physical defects which could have been either prevented or cured.* This is indeed a bad start on the journey of life.

The same story arises elsewhere than in this country. In America the problem of the pre-school child is receiving close attention and research. A report was issued by the Health Service of New York in June, 1922, giving the results of the physical and mental examinations of children upon registration before entering school. The plan outlined below has been accepted as the basis of a co-operative experiment in the examination of pre-school age children.

(1) The Department of Education to send notices to parents through school children, that younger children about to enter the school shall report for registration and physical examination.

(2) The Department of Health to utilize the services of Medical inspectors for such inspections, during the month of June.

(3) The American Red Cross to supplement the efforts of the Departments of Education and Health to undertake following-up work necessary to secure correction of defects.

Such a plan would enable children about to enter school to receive medical inspection supplemented by the correction of their defects before entrance upon school work. It would be possible to refer the children requiring attention to special agencies, convalescent homes, and to special clinics or to their private physicians, and thus save time lost by reason of absence from school in order to secure similar health service under medical inspection instituted during the time of school sessions. It would link up health and education in such a manner as to make the schools virtually serve as "health centres" for pre-school children without increased cost to the community. A physical examination of prospective entrants into the schools was conducted in eight schools according to this plan.

(a) In all 1,061 children were examined—506 boys and 555 girls. The majority of the children examined were in the age grouping of 5 and 6 years.

(b) Of the 1,061 children examined, 72.6 per cent. had defective teeth.

(c) Of the 1,061 children examined, 33.3 per cent. were found normal, and 66.7 per cent. with physical defects; of the latter, 25.2 per cent. were children who had defective teeth as the only defect found, 41.5 per cent. were children who had defects other than of teeth only—that is to say, one or more general defects, with or without defects of teeth.

(d) In comparing the findings, in regard to physical condition, in children of the pre-school age with those of school age, it will be noted that the percentages of hypertrophied tonsils, defective nasal breathing and malnutrition, are higher in the children of the pre-school age, that is for this group of 1,061, than in school children as follows:—

Cases Found with Physical Defects Requiring Treatment.

	Pre-School Age (Based on study of 1061 children—1921).	School Children (Based on study of 243,416 examinations—1920).
Normal	33.3 per cent.	30 per cent.
Teeth, as only defect	25.2 „	34.8 „
General Defects	41.5 „	35.2 „

Physical Defects.

	Pre-School Age (Based on study of 1061 children—1921).	School Children (Based on study of 243,416 examinations—1920).
Hypertrophied Tonsils	26.3 per cent.	15.3 per cent.
Defective Nasal Breathing	23.1 „	11.6 „
Malnutrition (3 and 4)	19.2 „	17.5 „
Defective Teeth	72.6 „	61.8 „
Pulmonary Disease	1.12 „	.19 „
Organic Cardiac	.94 „	1.3 „
Nervous Disease	.66 „	.5 „
Orthopædic Defects	1.12 „	.9 „

29. The problem is more than ripe for further consideration in our own country. It is not so much that we require clinical information as such, but it is necessary that the facts, circumstances and conditions be properly set out, in order that we may know more definitely at what points health and educational administration shall urge measures for prevention and amelioration consistent with economy and the prevention of waste. For here we have the most serious and wasteful defect in our national health service. Inquiry should proceed in this direction—forward from the infant welfare age and backward from the entrant school age—that is to say, definite co-operation is required between the three agencies more immediately concerned: the Infant and Child Welfare Centre, the Day Nursery and the Nursery School. The matters which require to be sifted and presented in each area include:—

(i) The age incidence and cause of crippling, infectious and other diseases of infancy.

(ii) The effect of neglect of these diseases on the general health of the child.

(iii) The means and institutions now existing for the prevention and amelioration of infant defects, and for securing true and effective *nurture* of the young child.

(iv) A considered scheme of child welfare before school days begin—a health scheme which shall be elastic enough to comprise all children of pre-school age in need of assistance or supervision.

30. The importance of the problem is self evident. When we are in a position to attend properly and effectually to the health of the pre-school child we shall have secured, in the first place, a mode of life in which the child can enjoy bodily comfort and a happy mental outlook; secondly, a reasonable opportunity for its proper education; thirdly, an immense saving of medical supervision at the commencement of school life and subsequently.

Nursery Schools.

31. Nursery Schools were first established under the Education Act of 1918. The powers of a local education authority in regard to these schools were re-affirmed in Section 21 of the Education Act of 1921.

The powers of a local education authority for elementary education shall include power to make arrangements for:—

(a) Supplying or aiding the supply of nursery schools (which expression shall include nursery classes) for children over two and under five years of age, or such later age as may be approved by the Board of Education, whose attendance at such a school is necessary or desirable for their healthy, physical, and mental development; and

(b) attending to the health, nourishment and physical welfare of children attending nursery schools.

32. The Nursery School movement was initiated through voluntary effort. The unhappy plight of many little children living in the poorer areas of large towns, who are too young to attend school and are yet no longer babies, whose mothers are out at work or otherwise preoccupied or unable to give them proper attention and care, and whose only playground and opportunity for fresh air is the street, appealed strongly to

social and educational workers in London and other cities, and impelled them to make some simple provision by which a few of these children could be cared for, looked after and taught the beginnings of personal hygiene, which a more fortunate child learns in his own nursery.

33. The Board of Education were not unaware of the need for Nursery Schools, and, indeed, the Consultative Committee issued in 1908 a comprehensive report dealing with this subject. Prior to the Education Act of 1918, the Board had no power directly to encourage or aid Nursery Schools as distinguished from Infant Departments; but, having obtained the necessary authority, they at once endeavoured to stimulate the voluntary establishment of Nursery Schools in suitable localities, and in March, 1919, regulations for Nursery Schools were issued, in the prefatory memorandum of which were incorporated the principal considerations affecting the organisation and administrative arrangements of such schools set out in Section 2, paragraphs 36 to 45, of my report for 1916.

34. It will be generally agreed that the best place for the child under five years of age ought to be with his mother in his own home, but when the home surroundings are unsatisfactory and likely to retard the physical and mental development of the child, a properly organised Nursery School would seem to be the most suitable alternative. Such a "School" should clearly be free from the type of control and discipline which may be appropriate to older children but is wholly out of place in dealing with children who are not yet fit for anything in the nature of systematic teaching. It should aim primarily at building up physique and fostering the mental growth of the children it cares for by placing them in happy, healthy surroundings, where they will be fed, warmed and cleansed, and taught by homely, kindly methods how to help themselves, contract good habits, and respect the wishes and desires of their fellows.

35. Unfortunately, these schools are relatively costly to maintain, for various reasons. *First*, they are small in size; strict limitation of numbers was recommended, partly to retain individual treatment, but also to prevent the spread of epidemic disease, particularly measles and whooping cough, both of which are especially dangerous to children under the age of five. *Secondly*, the staff is large as compared with the number of children, and this is inevitable if the needful personal attention is to be given. Further, more medical and nursing attention is called for than in the case of older children. *Thirdly*, the children usually remain all day at the school, take their meals there and sleep during the afternoon. This is necessary if the full effects of the "education" are to be secured.

The expenditure entailed, together with the need for public economy, has unfortunately prevented the development which had been hoped for. In Circular 1190 it was indicated that Nursery Schools could only be recognised under special circumstances, on an experimental basis, and where existing buildings were available. Such a pronouncement necessarily led to curtailment, greatly to be regretted from a medical point of view. Thus there has been no increase in the number of Nursery Schools. At present 24 are recognised by the Board, of which 10 are in London and 14 in other towns. Some were originally established by voluntary effort, others by Local Authorities.

36. The following list represents the existing Nursery Schools :—

Area.	Address of Nursery School.	Recognised Accommodation.	Name of Correspondent.
Birmingham	Selly Oak Nursery School, Tiverton Road.	35	Miss M. S. Hornabrook.
" ...	Summer Lane Nursery School	40	Town Clerk.
Bradford ...	Lilycroft Council Nursery School, Lilycroft Road, Manningham.	60	" "
" ...	Princeville Council Nursery School, Legrams Lane.	60	" "
" ...	St. Anne's R.C. Nursery School, Guy Street, Broomfields.	80	" "
Darlington ...	Fairfield Nursery School, Woodlands Road.	65	Miss S. A. Walker.
Derby ...	Wright Street Nursery School	66	Town Clerk.
Leeds ...	Hunslet Nursery School ..	40	" "
London ...	Deptford Goldsmiths' College Nursery School, New Cross, S.E.14.	24	T. Raymont, Esq.
" ...	Deptford, Rachel McMillan Nursery School, 232, Church Street, S.E.	100	Miss M. McMillan.
" ...	Deptford, Rachel McMillan (Stowage) Nursery School	100	Education Officer, L.C.C.
" ...	Hampstead, Christ Church Nursery School, Hampstead Square, N.W.3	20	" "
" ...	Hampstead, Kilburn, Union Jack Nursery School, 12, Netherwood Street, N.W.6.	28	Mrs. Ruth M. Balfour.
" ...	Kensington, Notting Hill Nursery School, 11, St. Anne's Villas, Royal Crescent, W.11	50	Mrs. Loveland.
" ...	Lambeth, West Norwood, Rommany Road Nursery School.	40	Miss M. Litchfield.
" ...	St. Pancras, Gospel Oak Grove, The Jellicoe Nursery School, N.W.5.	37	Mrs. H. J. Eveleigh.
" ...	St. Pancras, The Mary Ward Settlement Nursery School, 16, Burton Street, W.C.1.	20	Miss H. D. Oakeley, M.A.
" ...	St. Pancras, Somers Town Nursery School, 18, Crown-dale Road, N.W.1.	40	Miss C. B. Lawrence.
Manchester ...	Ardwick Nursery School, 79, Marsland Street, Hyde Road	30	Miss Teale.
" ...	Bradford Nursery School, The Free Church, Mill Street.	30	Town Clerk (from 1.4.23)
" ...	Mather T.C. Demonstration Nursery School, 61, Shakespeare Street.	35	Town Clerk.
Salford ...	Encombe Place Nursery School Chapel Street.	60	Mrs. Bythell.
Scarborough	Falsgrave Nursery School, 9, Seamer Road.	40	Mrs. Goodill.
" ...	Friarage Council Nursery School.	40	Town Clerk.

37. Happily, this list does not exhaust the examples of infant training, for numerous "experiments" are being made, which are proving both useful and hopeful. There is no doubt as to the popularity and utility of Nursery Schools, and practically all have a waiting list of children desirous of admission. At the Notting Hill School in London, for example, 74 children have their names on the waiting list, and in Birmingham, Summer Lane, there are as many as 100 names on the list.

38. I look forward to a time when the Nursery School will take its place in the programme of educational or health development.* Meanwhile, Authorities are gaining valuable experience of the work of these schools, and it may be that they will desire somewhat to modify requirements, especially if by so doing, they can reduce the cost of maintenance, and thus more easily justify the establishment of new institutions.

39. The Nursery School is related on the one hand to the Public Elementary School, and on the other to the Infant Welfare Centre and the Day Nursery. All children under five years of age come primarily within the scheme for Maternity and Child Welfare of the district and under the supervision of the Health Visitor. This supervision is apt to be somewhat perfunctory after the age of two on account of shortage of staff, while attendances at the Infant Welfare Centre also become irregular after infancy for obvious reasons. The Day Nursery, which usually exists in areas similar to those where a Nursery School is needed, provides for children up to school age and thus covers the Nursery School period (two to five years). It does not, as a rule, make "educational" provision for its toddlers, though it cares for their health and hygiene; it may possibly be desirable eventually to arrange for closer association between Day Nurseries and Nursery Schools than obtains at present. The children pass from the Nursery School to the Infant Department of the Elementary School and there should be mutual and sympathetic understanding of the training in both places.

40. It is generally conceded that the Nursery School should be in the charge of a specially trained, certificated teacher with less highly qualified assistants for nursing and attendance. The number of qualified staff depends on the size of the school. It may be necessary on financial grounds somewhat to modify the original standard of staffing. Children of two to five are too young for systematic teaching, and although they require wise and skilful handling, much of the daily routine can be carried out by unqualified assistants under trained supervision, provided a suitable personnel is secured. Thus, we might cheapen our schools by spreading out our trained staff—either by enlarging the schools without corresponding increase in the number of certificated teachers, or by arranging for one head teacher to supervise two or more small schools, and such experiments are well worth trying.

41. It is possible that, given proper safeguards, the size of the school need not be so strictly limited from the point of view of infectious disease as was at first supposed. The largest Nursery Schools in the country are

* The interest which has been aroused by Nursery Schools is illustrated by a report issued in 1923 by the Joint Parliamentary Advisory Council, in which the scope and value of these Schools are briefly set out, together with information in regard to existing schools and some notes on arrangements in America, Belgium, France and Italy.

the two adjoining the Rachel McMillan Schools at Deptford, accommodating between them 200 children, one of which is voluntary, while the other was provided by the London County Council in 1921. They share one trained Superintendent and are under the direct medical supervision of Dr. Margaret Hogarth, who pays a weekly visit. Special attention is given to the control of epidemic disease, and shortly after its establishment the Council School was considerably handicapped by an outbreak of measles. This was energetically dealt with and, in the view of the Medical Officer, the outbreak served to demonstrate that the Nursery School is the one place where such an epidemic can be controlled satisfactorily.

"On the discovery of the first case steps were taken at once to deal with an outbreak, and teachers and nurse were on the alert for the first crop due nine to fourteen days afterwards, the second crop following in due course. A few sporadic cases completed the outbreak, which was practically over in five weeks. It says much for the vigilance of the staff that only one case showed a rash in the school. Each child as it showed symptoms was taken home and the parent instructed to keep him in bed for a week, with the result that only two cases developed discharging ears, and two were taken to hospital, where they unfortunately died from a secondary infection. It was found practicable to re-admit the majority of the children exactly a fortnight after exclusion, instead of the three weeks then customary in the elementary school. There is no doubt that the good recovery of these very young children was due in the main to their being kept in bed. They benefited considerably too, from the altruistic attention of the staff, who visited the homes with practical advice and encouragement. The Borough Medical Officer was of great assistance, sending nursing and material assistance where the superintendent found it necessary."*

42. The experience of the Nursery School at Hunslet, Leeds, has been somewhat similar. Arrangements are in force by which the children and their equipment are divided into protected cases and contacts on the first appearance of infectious disease. In the midst of a fairly severe epidemic of measles the school had only a few isolated cases, with no deaths.

43. Other ailments common among children of this age are discharging ears, adenoids, nasal catarrh, all of which may lead to serious consequences in later life if not effectively treated when they first appear. Minor ailments such as impetigo, sores, uncleanliness of head and body are being wisely handled with the assistance of the school nurse and the school clinic, and their treatment is bound to exert a good effect on the general health and nutrition of the children.

44. Though at present the number of children attending Nursery Schools is extremely small compared with the number of children in need of such care, these schools have already made a positive and permanent contribution towards the solution of the difficult problem of supervising the health of the pre-school child. Working in conjunction with the Maternity and Child Welfare Service and with the School Medical Service, its medical inspection and arrangements for following up defects, and its clinics for the treatment of minor diseases, they unquestionably serve a very valuable purpose.

* Annual Report of the County Medical Officer of Health, London County Council, 1922, page 71.

School Medical Officers' Reports.

45. The reports furnished annually by School Medical Officers on the work of the year not only review the scope of the service in the area and indicate its limitations as well as its accomplishments, but they furnish counsel to the Authority and provide material which enables a comparison to be made between the work of the year and preceding years. An examination of the reports for 1922 shows that, despite the national necessity for economy, much has been done in the direction of stabilising arrangements, and in some areas improving methods, and even introducing new provision for the treatment of defective conditions. A number of School Medical Officers have undertaken, in addition to the routine work of the School Medical Service, special enquiries into matters directly connected with the health of the school child. Copies of the School Medical Officer's Report should be sent to the Board as soon as possible after the end of the year to which the report relates, and in every case not later than the 1st of April following.

School Sanitation.

46. Some reference should be made to the environment in which the scholars find themselves in the schools. It is there that the child is unconsciously gaining impressions from his surroundings without the aid of active instruction on the part of anyone. It is practice rather than precept that is the educational agent at work, and habits of mind are being formed in relation to the fundamental principles underlying social and personal well-being. These principles are concerned to a considerable extent with hygiene and the application of its laws. Before the child is old enough, perhaps, to assimilate oral instruction in hygiene, or responsible enough to put it into practice, his observation and experience in the school have taught him valuable lessons. "It is in the school," says Dr. Mulholland (*Swinton and Pendlebury*), "that the basis of education in hygiene is laid. The fruits of this education will in after years be a help or a hindrance to the work of the health department in all its sphere of activity, and no amount of talking or lecturing will give the child a health ideal. What he absorbs and what he will ultimately practise is what he learns by example. The insistence upon cleanliness of the person of the child will develop the habit of cleanliness of the adult. Scrupulous cleanliness in the school will lead to a similar cleanliness in the house. Closed windows with defective illumination and lack of regard for fresh air will be followed by similar conditions in the house, for the child of to-day is the householder of to-morrow." Obsolete and unclean lavatory and sanitary conveniences in the school are, Dr. Mulholland considers, a danger to present health. They will be a lifelong disadvantage to the child who never cultivates at school the use of and the desire for better things. Many of the schools are unsatisfactory from the standpoint of structure, window-space, cloakrooms, sanitary conveniences and lavatory accommodation. These defects are remediable, and their removal will aid the teachers in the cultivation of a hygienic habit in the children.

47. Most of the reports deal with the sanitary condition of the school premises. While there is a record of considerable improvement in many cases, there are still many references to (1) unclean conditions of floors, walls and ceilings of school rooms, (2) inadequate provision for washing

in the schools, poor lavatory accommodation and equipment, (3) indifferent lighting, owing to small or insufficient windows, or to arrangements of seats, or to inadequate artificial illumination, (4) insufficient heating in the winter, (5) ventilation defects of various kinds and the failure to flush school rooms with fresh air when the children are in the playgrounds, (6) unsuitable equipment in the way of desks, blackboards, etc., and the unnecessary placing in common use of such articles as pencils, crayons, etc., (7) defective water supply and failure to secure thoroughly clean drinking vessels (some Authorities provide as an excellent substitute small drinking fountains), (8) defective playground surfaces, which means lodgment of water after rain, and results in dirty school rooms and in children being deprived of exercise or in their sitting in school with wet feet, (9) unsuitable, unclean and imperfect sanitary arrangements, and (10) badly equipped cloakrooms and the absence of facilities for drying wet clothes and boots. Defects such as these may be directly prejudicial to the health of the children, and, on health and educational grounds, call for immediate attention and remedy.

The Teaching of Hygiene.

48. In paragraphs 32 to 38 of my report for last year reference was made in some detail to the instruction which should be given in Training Colleges and to school children in hygiene, and the purpose of such instruction. It is not necessary to repeat what was then said, but the subject should receive attention in every school. To teach a dozen subjects and fail to teach hygiene would indeed be uneducational.

49. The Medical Department of the Board have issued four special syllabuses dealing with the subject (the dates refer to the latest editions), viz. :—

- (1) A Syllabus of General Hygiene, 1919;
- (2) A Syllabus of Physical Training, 1919, with Special Supplements on Games and Physical Exercises for younger children;
- (3) A Syllabus and Notes on the Hygiene of Food and Drink, 1920;
- (4) A Syllabus of Teaching in Mothercraft and Infant Welfare, 1910.

These syllabuses have been issued in tens of thousands and have been used in greater or less degree in almost all schools.

50. We have been considering whether some steps could be taken to bring into closer association the instruction that is at present given in Training Colleges in the Principles of Teaching, Hygiene and Science (especially Biology). Formerly the syllabus of the Board on the teaching of Hygiene was arranged on a physiological basis, the headings of the syllabus following in the main the different systems of the body. In practice this proved unsatisfactory in some respects, because most of the students entering the Training Colleges had not sufficient scientific knowledge to enable them to derive much benefit from instruction in Physiology in this way. The syllabus was therefore rearranged, and it was left to each lecturer to deal with body structure and function as seemed best suited to the requirements of particular students, without reference to a future examination paper.

51. Simultaneously with these changes the place of Biology has been more fully recognised in the Training College curriculum. Provision has recently been made in the Board's syllabus for a general course in Biology dealing with both plant and animal development, and this course is in large measure supplanting the older course which dealt only with Botany. A third factor of which account should be taken is the opinion which has been pressed upon the Board that more attention should be paid to the training of teachers in such questions as the biology of reproduction and the hygiene of sex.

With these considerations in view, the Board arranged in the present year for a short course to be held at Oxford of instruction in biology in relation to education and to the teaching of hygiene in training colleges. The course was intended primarily for those members of the staffs of the training colleges who take part in the teaching of hygiene and biology. It included lectures and practical demonstration work in zoology illustrative of life processes among certain forms of life and general lectures and discussions upon the relationship of the teaching of biology to education and hygiene. These lectures embraced such subjects as biology and its place in modern life, biology and inheritance, man as an organism, form and function in relation to inheritance and environment, animal behaviour, biology and psychology, biology and its place in education and in the curriculum of the training college, the teaching of hygiene and of sex hygiene in the training college.

52. There is no doubt that however useful the class lesson in Hygiene may be the proper way of teaching the subject to children is by the encouragement of healthy practices and habits. Cleanliness of person, healthy habits, the simple practice of ventilation go a long way. Much sound and valuable work is being done by school teachers in this way. The recent exhibition in London at the time of the Imperial Education Conference demonstrated this fact. Exhibits dealt with the hygiene of the Nursery School and the Infant School (cleanliness, rest, recreation, physical training, domestic duties, washing, bathing, etc.) with Health Brigades, the Conservation of Food, and Regional Surveys (information on the history, geography, industrial activities, importance in art and literature, and Communal health of small villages and towns). These Surveys included particulars of the source of the water-supply, with models and maps; housing schemes; rainfall, temperature, wind and barometric charts; population, birth-rates and death-rates; the provision of open spaces, etc. Such instruction cannot fail to impress the child's mind with the principles and practice of hygiene. The whole exhibition was also a triumph of manual work and the capacity of the child to *do* things and to become productive—in itself a lesson in Hygiene.

53. Another example of hygiene teaching is to be found in the Birmingham Health Brigade :—

This movement was introduced into the Elementary Schools of Birmingham about six years ago by a member of the science staff of visiting teachers. The object is to induce the children to put into actual practice in their everyday life the instruction given in the weekly lessons in personal hygiene, to form healthy habits of mind and body.

The organisation of the Brigade lies chiefly with the visiting science teachers, whose measures vary with circumstances. In some schools the work is to a large extent managed by the girls themselves. Each class elects a captain whose duty it is to inspect members daily and report on teeth, nails and general tidiness and cleanliness to the visiting science teacher. In all cases the school captain, with the con-

sent of the class teachers concerned, arranges for classes to be inspected by the visiting science teacher. The various school captains meet once or twice a year, when matters concerning the Brigade are discussed and suggestions for improvements considered.

Each member of the Brigade wears a badge, and has a membership card of the rules. Large cards of the rules are printed for use in the schools. There are several groups of schools—each visiting science teacher has her group of schools—working, to some extent, independently of one another. Each group has a Health Brigade Banner designed and worked by some of the elder girls.

The school obtaining the highest percentage of members in the group to which it belongs is presented with the banner, which is held by that school for a year.

In 1923 the Brigade had 2,740 enrolled members. Much of the success is due to the science teachers who have taken up this work as the practical continuation of their own teaching in the schools.

54. I am satisfied that the effective teaching of Hygiene in each school and to each class is of the first importance in all grades of schools, elementary, secondary, proprietary and public schools. If for eight or nine years the child is taught of what personal and public health really consist, immense and incalculable good will result. The child and young adolescent have got to be *trained* in the way of health and physical efficiency. In order to secure this two things are necessary. (i) First, *the teacher must be equipped in the subject*. He is not born with the knowledge, it has to be acquired. A great responsibility rests upon the Training Colleges to provide this preparation for the teacher, a responsibility which I regret to say is not fully appreciated by some of the Colleges, as is proved by many of the answers to the final examination papers in Hygiene. The ignorance of some of the candidates is profound; what then are we to expect from the children they instruct? College authorities should give this subject careful attention, and arrange for it to be taught by competent persons who understand the whole question of physical education, including hygiene. (ii) Secondly, *the health instruction in the school must be adequate*. It should be not only class teaching but a pervading influence; it should be not only information, but direction; it should be not only intermittent and theoretical, but continuous and practical. Every week some definite guidance should be given and repeated until habits are formed. Until hygiene is a habit and a way of life it is of little avail. It was explained in detail last year how this can be done, and I can only refer to paragraphs 32 to 38 in the Report for 1921.

Physical Education.

55. The administration of physical education has been continued along the lines outlined in previous Reports. As far as *Public Elementary Schools* are concerned, the position is briefly as follows:—

(1) *A Syllabus of Physical Training*, which was revised and remodelled in 1919, is in use in all schools, and is being applied with increasing evidence of understanding and appreciation.

(2) *The regular teaching* of physical exercises is in the hands of the class teachers. As a rule each teacher is responsible for his or her own class, but there is a certain amount of specialising which allows a teacher who is particularly proficient in this subject to undertake it in other classes besides his own.

(3) The *time* given to physical training is gradually increasing, and, although in many areas there is a minimum of 60 minutes a week, divided into three 20-minute lessons, in others a daily period is given, one or more lessons being devoted to games or swimming.

(4) Physical training is a compulsory subject in all *Training Colleges*, both for men and women, and special care is devoted to training students to teach the subject. The standard of instruction has steadily progressed, and the curriculum has gradually been widened to include games suitable for the playground, gymnasium and playing field.

(5) Many Local Education Authorities employ *Organisers* of physical training, and there are now 132 Organisers and Assistants employed by 77 Authorities (out of 317) in England and Wales*. It is the business of these officers to supervise the teaching in the schools (they do not themselves teach the children) and to give advice, demonstrations and general encouragement and help to the teachers.

(6) *Teachers' Classes* and *Vacation Courses* are held to enable class teachers to improve their qualifications for teaching physical exercises or some special branch (*e.g.*, games, folk dancing), and these classes are under the direction of the Organisers, and may actually be taught by them.

56. The expansion of physical training necessarily suffered, in common with all other educational services, from the urgent need for economy which became evident in 1920. There are various reasons, however, why reduction in expenditure should not be allowed to press quite so hardly upon this as upon some other services. This is fully recognised by the Board, and in Circular 1269 the attention of Local Education Authorities was specially called to the value of an efficient system of physical training. It was pointed out that such a system is a potent auxiliary in the prevention of debility and disease among school children, and is relatively inexpensive to maintain. Circular 1291, on the Organisation of Physical Training, issued in December, 1922, again refers to this, and Authorities were encouraged to continue the development of physical education, and in particular to proceed with the appointment of Organisers.

* Organisers of physical training are employed by the following Local Education Authorities:—Berk. (1), Bucks. (1), Cheshire (2), Cornwall (1), Cumberland (4), Derbyshire (1), Devonshire (2), Durham (1), Hants. (3), Herts. (1), Leicestershire (2), Norfolk (1), Northampton (1), Northumberland (2), Somerset (2), Staffs. (1), Suffolk, E. (2), Surrey (1), Warwick (1), Wiltshire (1), Yorks., E.R. (1), Yorks., N.R. (2), Yorks., W.R. (12), London (6), Birmingham (2), Blackburn (1), Blackpool (1), Bolton (2), Bradford (3), Brighton (1), Bristol (2), Bury (1), Coventry (1), Croydon (1), Darlington (1), Derby (1), Gateshead (2), Huddersfield (1), Kingston-on-Hull (1), Leeds (2), Leicester (1), Manchester (1), Newcastle-on-Tyne (4), Norwich (1), Nottingham (2), Oldham (1), Oxford (1), Plymouth (2), Portsmouth (1), Reading (2), Rotherham (1), Sheffield (5), Southport (1), Stoke-on-Trent (2), Sunderland (2), Tynemouth (2), West Bromwich (2), Wolverhampton (1), Brighouse (1), Colchester (1), Crewe (1), Folkestone (1), Reigate (1), Widnes (1), Barking Town (1), Ilford (1), Carnarvon (2), Denbighshire (2), Glamorgan (1), Monmouth (2), Cardiff (2), Merthyr Tydfil (2), Newport (Mon.) (2), Swansea (1), Pontypridd (1), Aberdare and Mountain Ash (2).

57. Physical training is under the direction of the Medical Department of the Board. The staff of expert Inspectors includes three men and seven women. They are responsible for inspecting physical training, not only in Elementary Schools, but in all types of educational institutions.

58. Special attention has been given by Captain Grenfell during the past year to *Secondary Schools* for both boys and girls. There is exceptional need for better provision and facilities, especially in boys' schools.

Boys' Schools.—135 typical grant-aided schools were visited. Of these, only 63 per cent. had suitable gymnasias or halls, and only 44 per cent. proper equipment and apparatus. 62 per cent. had wholly inadequate playing fields and only 27 per cent. possessed satisfactory accommodation for both games and gymnastics. The time given was almost invariably inadequate. The most serious disability, however, was the lack of properly trained, competent teachers.

Girls' Schools.—These are usually better staffed and equipped than boys' schools. There has been less tendency to rely on games for physical exercise and there is a longer tradition of systematic training, but here too, the time devoted to the subject is inadequate, especially in the Upper School, accommodation is deficient and only a proportion of the girls are satisfactorily trained.

59. The physical condition of boys and girls in secondary schools is referred to in Section III of this Report, and a study of the returns indicates a need for some re-organisation and development of the arrangements for physical training and remedial exercises.

Open-Air Education.

60. Education under open-air conditions has in recent years been a fruitful field for experiment, and the almost invariable result is that the experiment has fully justified itself. The methods adopted have been various, but seldom without distinct benefit to those primarily concerned. The extension of such education, however, is incommensurate with its established value. As has been pointed out in these reports costly accommodation is not required, nor in the majority of cases is much interference with the school curriculum entailed. The principal forms of open-air schooling are :—

(1) *Classes in the Playgrounds of Public Elementary Schools.*—A large number of Local Education Authorities now make arrangements for classes to be held in the playgrounds of their schools. In addition to the beneficial effect which these classes have on the health of the children there is the added advantage in the case of full or overcrowded schools of a certain relief on the accommodation. Increasingly teachers are becoming interested in the provision and alive to its inherent possibilities. Little, if any, expense is incurred in the arrangements, so that the question of cost cannot be pleaded as a deterrent.

(2) *Classes in the Public Parks and Open Spaces* are organised in London, Nottingham, Newport (Mon.), Wolverhampton and a number of other centres.

(3) *School Journeys.*—Arrangements are made in some educational areas for children to visit the seaside or country in charge of their teachers. The duration of such visit varies from one day to

three weeks. Owing to the demand for economy there were fewer school journeys in 1922 than in the previous year. Although no financial assistance was given by the Council to the school journey movement in London in 1922, nevertheless 107 school journeys were made. The average distance travelled was about 65 miles from London. In view of the risks that may be incurred by the inclusion of children unfit to take part, on account of physical defect or contagious or infectious diseases, the endeavour was made to secure medical examination of all the children immediately before departure.

(4) *Holiday or School Camps* may be approved by the Board under Section 86 of the Education Act, 1921, which empowers Local Education Authorities to make arrangements to supply or maintain or aid their supply or maintenance. Many of these camps have been organised for some years and have been described in previous reports.

(5) *Open-air Classrooms* have been provided in some of the Public Elementary Schools in a number of areas. The main requirement is that one side of the room shall be open to the outside air, thus ensuring that the air of the room is always kept fresh. An excellently planned school with open-air classrooms has just been opened in the Welwyn Garden City, Herts.

(6) *Open-air Day Schools*.—These schools are recognised by the Board as Special Schools, and particulars as to their accommodation, etc., are given in List 42. The 37 schools at work in 1922 provided for the accommodation of 2,820 children.

A fine example of an open-air educational institution is the new Cropwood School and Summer Camp (the gift of Mr. and Mrs. Barrow Cadbury to the Birmingham Education Committee) opened in June, 1922. This school is situated in 75 acres of meadow and woodland on the Lickey Hills, and consists of the main administrative building, dormitories for 52 children, and classrooms. The children are to remain for six months and the curriculum is suitably modified. The Camp is for 51 children for a fortnight.

(7) *Residential Open-air Schools of Recovery*, the most important open-air institutions in the country, provide accommodation for pre-tubercular or invalid children. The length of stay varies from three to twelve months. The recognised accommodation at the 25 approved schools in 1922 is for 1,535 (*see* List 42).

In studying the Reports of the School Medical Officers it is abundantly clear that the open-air movement has secured the active support of the more progressive of the Local Education Authorities. Emphasis cannot be too strongly placed on the value of such provision. On every hand the evidence is that experience has uniformly justified this method, and that enhanced vigour of body and mind of the child is the almost invariable result of well-considered schemes for open-air education.

Cost of the School Medical Service.

61. The following table summarises the expenditure of Local Education Authorities on the work of medical inspection and medical treatment of children attending Public Elementary Schools for the first three years

following the inauguration of grants of the Board in aid thereof, and for the years 1920-22 :—

Expenditure on	1912-13.	1913-14.	1914-15.	1920-21.	1921-22.
	£	£	£	£	£
Salaries of Medical Officers ...	139,774	151,339	180,377	473,911	} 966,564
Salaries of Nurses ...	37,119	43,212	57,586	275,432	
Travelling expenses of Medical Officers and Nurses.	15,258	16,779	21,052	54,900	56,190
Drugs, materials and apparatus...	7,378	9,808	14,069	59,708	} 64,380
Provision of Spectacles ...	1,650	2,155	3,681	15,548	
Contributions to Hospitals, Infirmarys, Nursing Associations, etc.	23,629	27,459	39,315	103,722	139,704
Provision of clerical assistance, premises (clinics, administrative offices, etc.), stationery, printing, postage and miscellaneous objects.	61,185	74,983	95,348	346,961	164,768
Total ...	285,993	325,735	411,428	1,330,182	1,391,606

62. The grant paid to Local Education Authorities in respect of their expenditure in connection with the School Medical Service is calculated on the basis of one-half of the net expenditure approved by the Board, and is payable by instalments during the year. The amount of grant is finally adjusted after the audited accounts of the Authorities for the year, and other returns required by the Board for the purpose, have been received and examined. In 1922 the total receipts of the Local Education Authorities, including parents' payments (£26,692), amounted to £37,466, leaving a net expenditure of £1,354,140.

III.

FINDINGS OF MEDICAL INSPECTION.

63. Obviously a first consideration of the Reports of the School Medical Officers for the year is concerned with the ascertainment of health or ill-health, and whether or not there is evidence of an improved condition of physical well-being existing among the school children. Is the work of the School Medical Service proving itself to be progressively effective, and if not what factors are militating against its success?

64. The record of the year again shows that the prevalence of physical defect in school children remains a factor prejudicial to that measure of educational achievement and progress which the national expenditure on education warrants, and indeed should ensure. The purpose of the School Medical Service is, I think, being fulfilled, and if the rate of advance is not as rapid as some may desire, nevertheless there are no signs of retrogression, and in certain directions the evidence is conclusive of well-maintained improvement. Sir William Hamer states that, in London,

“ (1) the medical and physical examinations show that there has been a considerable improvement in the cleanliness of the children during the year ;

“ (2) as a result of school feeding and unemployment allowance the number of under-nourished children showed again a reduction in 1921, and this improvement was maintained in 1922 ; the number of children actually suffering from under nourishment was even less than when the temporary war prosperity was at its height ; and

“ (3) 75,784 children in the respective age groups were found to be suffering from ailments for which treatment was considered necessary, which represents a smaller percentage than obtained in any previous year, being 37·9 per cent., as compared with over 39 per cent. in 1920 and 1921, over 42 per cent. in 1919, and 44 per cent. in 1918.” He adds that the figures of routine inspection show “ that steady and continuous progress is being made in the improvement of the health of school children in London. In the past year the improvement has been maintained in every direction, and in no single instance has a check been experienced. In the relief of dental disease a most noteworthy advance is recorded, and something has been done to reduce the excessive incidence of visual defect, anæmia, heart-strain and deformity upon the older girls.”

This satisfactory progress has not been confined to London. Dr. Eustace Hill (*Durham Co.*) writes that “ there has been undoubtedly a very great improvement in the health and physical condition of the school children of the county during recent years, partly as a result of the medical inspection and treatment of the children, and partly also to

the inculcation in the parents, as a result of other activities, of the importance of personal health.”*

65. In 1921, approximately 2,500,000 children were examined in England and Wales, and upwards of 40 per cent. were suffering from physical or mental defect of some degree, major or minor, as compared with 47 per cent. in 1920. In 1922, 2,400,000 children were examined, and the routine inspections showed 42·2 per cent. to be defective in some degree. An estimate of the incidence of defect, under the principal headings, may be made from a consideration of the figures given in the following table of returns furnished by the Local Education Authorities of nineteen of the largest representative areas† in the country, based on the routine medical inspection of 707,346 children.

Defect.	Number of Children with Defects.	Percentage of Children with Defects.
Malnutrition	15,282	2·2
Skin Disease	14,611	2·1
Defective Vision (of all forms)	145,521	20·6
Eye Disease	11,759	1·7
Defective Hearing	7,899	1·1
Ear Disease	11,503	1·6
Nose and Throat Disease	90,832	12·8
Enlarged Cervical Glands (non-tubercular)	34,211	4·8
Defective Speech	3,580	·5
Dental Disease (routine medical inspection)	241,052	34·1
Heart Disease—Organic	5,773	·8
„ „ Functional	9,043	1·3
Anæmia	14,482	2·0
Lung Disease (non-tubercular)	21,284	3·0
Tuberculosis Pulmonary definite	694	·1
„ „ suspected	1,895	·3
„ Non-Pulmonary	1,796	·3
Disease of the Nervous System	4,718	·7
Deformities	19,940	2·8
Other defects and diseases	24,004	3·4

66. In endeavouring to obtain an appreciation of the health of children of school age, the important group of children continuously absent from school on account of ill-health or invalidism must not be overlooked. The majority of these children are brought to the notice of the Local Education Authority through the activities of the School Attendance Department. In *London* alone there are approximately 3,000 children who are absent from school for periods of not less than three months. In all cases where the child has been absent for so long a special report is called for, in order that the question of examination for special education,

* See also Report of Medical Research Council on *The Relation between Home Conditions and the Intelligence of School Children* (Isserlis), No. 74, 1923, price 1s.

† The areas selected were London, Bucks, Cheshire, Derby C.C., Durham C.C., Kent, Lancs, Staffs, Surrey, Yorks (W.R.), Birmingham, Bradford, Leeds, Liverpool, Manchester, Nottingham, Sheffield, West Ham and Cardiff.

convalescence, or other remedial measures may be considered. The census for the last four years in *London* is as follows:—

Complaint.	Number of Children and Percentage of Whole.			
	1919.	1920.	1921.	1922.
Rheumatic Diseases	412 (14·4)	537 (20·2)	659 (21·6)	682 (23·5)
Nervous Disorders	211 (7·4)	291 (8·2)	238 (7·8)	245 (8·4)
Tuberculosis ...	586 (20·6)	595 (22·3)	613 (20·1)	502 (17·3)
Anæmia (Debility)	226 (7·9)	155 (5·8)	219 (7·2)	212 (7·3)
Ringworm ...	129 (4·5)	125 (4·7)	231 (7·6)	200 (6·9)
Other Skin Diseases	161 (5·6)	102 (3·8)	77 (2·5)	52 (1·8)
Eye Disease ...	180 (6·3)	167 (6·3)	150 (4·9)	144 (5·0)
Other Diseases ...	951 (33·3)	765 (28·7)	862 (28·3)	865 (29·8)
Total ...	2,856 (100)	2,665 (100)	3,049 (100)	2,902 (100)

"This table," says Sir William Hamer, "gives very important indications as to the *incidence of chronic ill-health* upon the child population. It will be seen that external eye disease and skin diseases which together accounted for 12 per cent. of chronic absences in 1919 have fallen to 7 per cent. in 1922, but the reduction is chiefly in chronic skin disease, which was so prevalent in the later years of the war, but has fallen from 5·6 per cent. in 1919 to 1·8 per cent. in 1922. The other satisfactory feature of the table is the reduction in absolute numbers and in percentage of the total complaints of tuberculosis in school children, which amounted to 20 per cent. in 1919, but only to 17 per cent. in 1922.

"On the other hand there has been a very great increase both absolutely and relatively in the number of children absent for rheumatic conditions (including chronic and heart disease). In 1919 there were only 412 such cases, while in 1922 there were 682, and the proportion of the whole causes of absence rose from 14·4 per cent. in 1919, to 23·5 per cent. in 1922. It is impossible to avoid the suggestion that this great increase in rheumatic disease is in some way connected with the prevalence of scarlet fever which has been so marked a phenomenon during the last three years.

"The preponderance of girls over boys absent at the age of 12 and 13 is again marked (girls 11·2 and 12·5 per cent., boys 7·8 and 7·7 per cent.). The heavier incidence of rheumatism upon girls is also very striking, as in absolute numbers 469 girls were affected as compared with 213 boys, and this disease accounted for 27·3 per cent. of the total complaints in the case of girls as opposed to 18 per cent. in boys."

67. Here, then, we have the principal facts. Routine medical inspection finds that about 40 per cent. of the children have a greater or less degree of physical defect. Definite malnutrition, heart disease, anæmia and deformities are each present in about two per cent. of the children—broadly, 100,000 children suffering from each of these four conditions in the country as a whole. They are serious conditions in childhood and may prove disabling in after life. A larger burden of disease consists of (a) defective vision, 20 per cent.; (b) ear, nose and throat disease, 14 per cent., and (c) a severe degree of dental disease, 34 per cent. Of the defective vision we may say that 10 per cent. of the children suffer from relatively serious defect. We must not forget that these are maladies found at school. There are in addition the infectious diseases, which unfortunately often leave behind, and especially if neglected or untreated, a good deal of disablement and the seeds of further disease.

68. The following table gives the incidence and mortality in England and Wales for 1921 and 1922 of the infectious diseases which particularly affect childhood :—

	Cases Notified.		Deaths.	
	1921.	1922.	1921.	1922.
Cerebro-spinal Fever ...	411	344	416	360
Diphtheria	66,506	52,153	4,772	4,075
Measles*	—	—	2,256	5,709
Poliomyelitis	488	355	129	109
Polio-encephalitis	51	31	40	27
Encephalitis lethargica	1,470	454	729	339
Scarlet Fever	137,073	108,242	1,305	1,382
Chickenpox*	—	—	57	40
Whooping Cough*	—	—	4,576	6,370

* Not compulsorily notifiable. In 1918 measles was notifiable and the number of cases notified was 414,346.

Infectious disease has been responsible for the closure of schools and for the exclusion of a large number of children during the year. In London scarlet fever fell, but diphtheria remained unusually high during 1922. Influenza reached its maximum severity in the second week of 1922. From the point of view of the public health and on account of their prevalence and sequelæ, measles and scarlet fever are perhaps the most serious of the infectious diseases of childhood.

69. In the following pages or in subsequent sections will be found particulars of the results of medical inspection in respect of uncleanness, defective vision, tuberculosis, ringworm, diseases of the ear, nose and throat, and stammering.

Uncleanliness.

70. The School Medical Service has achieved signal success in its fight with unclean conditions of body and head existing among school children. The work has demanded a great deal of attention on the part of the school medical staff, but it has been well worth while. The record throughout the years is of progressive improvement, and the reports for 1922 show that the findings for that year indicate a substantial advance on the previous year. The decline in unclean conditions means not only a sweeter atmosphere in the school, but an improved physical condition among the children. Dirt is the parent of disease. The educative value of cleanliness is also real and important, and needs no advocacy. It must be added that present achievements might readily be improved upon if the dormant health conscience of parents could be aroused, and if the home conditions were better. Dr. Barlow (*Wallasey*) speaks for all school doctors when he says, "it is the experience of the nurses that the same children come back time after time. It is of very little use freeing a child from vermin if the home conditions are such that the child must be reinfected on its return. Permanent benefit will only result from improvement in the homes. The cleansing of a child is merely the removal of a symptom; the cause is the indifference, neglect or ignorance of the parents. Here the school nurses should concentrate on the homes."

71. Sir William Hamer says that "the steady fight during the last twenty years against dirt and verminous conditions has been rewarded

by a considerable measure of success." In the earlier years the problem in London was *gross* infestation. In 1913, when a comprehensive series of figures was first compiled, there were still 2 per cent. of the children who were infested with body vermin. (a) The systematic surveys, (b) the establishment of cleansing stations, (c) the progressive application of the cleansing scheme to every school, (d) the promotion of school bathing facilities, (e) the steady development of educational methods, and (f) the pressure of public opinion have now resulted in the reduction of the cases of body vermin found to the small proportion of two in a thousand of the children examined. These methods should be applied by other Authorities faced with unclean children.

By steady work the percentage of girls in the London schools who were free from all traces of verminous infestation has been raised, the percentage of 8 year old girls with perfectly clean heads being 79·3 in 1922, as against 74·9 in 1921, and 67 per cent. in 1913. A closely corresponding condition was established in relation to the 12 year old group. It is satisfactory to note also the disappearance of the acute opposition on the part of the parents, which formerly marred the Council's Cleansing Scheme. The total number of examinations made at rota visits during the year by the district school nurses was 2,158,100; verminous conditions were present in 405,335 instances, or 18·7 per cent., as compared with 20·5 per cent. in 1921 and 18·9 per cent. in 1920. The results of the work for the several years 1912-1922 under the Cleansing Scheme are shown in the following table:—

Year.	No. of examinations made at Rota visits.	No. of verminous conditions noted at Rota visits.	Per cent.	No. of verminous children referred to stations.	No. subsequently cleansed by parents.	No. of verminous children cleansed at stations.	No. of scabies cases bathed at stations.	No. of cleansings for vermin and scabies.
1912	—	—	—	23,573	10,179	10,340	—	26,913
1913	—	—	—	29,903	15,241	14,662	—	41,458
1914	1,053,218	286,664	27.2	28,361	14,392	13,969	589	42,557
1915	2,444,885	689,428	28.1	28,063	14,677	13,386	1,059	43,884
1916	2,399,280	612,659	25.5	24,705	11,314	13,391	3,213	54,945
1917	2,130,186	528,658	24.8	19,506	8,506	11,000	6,940	80,755
1918	1,921,762	465,608	24.2	13,237	4,912	8,325	9,624	95,033
1919	2,031,735	459,396	22.6	33,222	15,929	17,292	8,371	105,639
1920	1,944,105	368,732	18.9	43,764	16,355	27,409	9,675	123,975
1921	2,113,463	435,282	20.5	65,084	22,489	42,595	5,863	92,024
1922	2,158,100	405,335	18.7	73,800	26,031	47,769	3,944	80,744

The foregoing report is typical of those received from the country generally, though the London Scheme of Cleansing is more complete. The work entails an expenditure of time and money which could be avoided, or usefully diverted into other channels for preventive or remedial work, were parents and guardians of children alive to their own personal responsibility in the matter. A material advance in this direction is assuredly being secured by the exercise by Local Education Authorities of their cleansing powers and their statutory means of prosecution for neglect (*see* Appendix, p. 147).

Vision.

72. The detection and correction of defective vision in school children form one of the most valuable functions of the School Medical Service. Poor eyesight imposes a serious limitation in every department of life,

but it is a terrible handicap in school days.* The process of education is impaired or even rendered useless unless a child can see the blackboard, read his lesson books, and employ his faculty of observation unrestricted by visual defect. It is incumbent on the School Medical Officer every year, and all through the year, to give attention to this problem of eyesight. First, he should include in his health policy such measures as will tend to prevent the manufacture or increase of visual defect in the schools. He should consider the lighting of the school, natural and artificial, the form and position of the school desks, the arrangement of the class in relation to the position of the blackboard or the map, the size and character of the text-type of the school books, and any possibility of eye strain arising out of the curriculum. Then, secondly, he must find out all poor-sighted children and diagnose exactly their visual defect. Thirdly, he must advise his Authority as to treatment and the provision of spectacles. In the following table some particulars regarding the incidence of defect in twenty-four typical areas are given.

Prevalence of Defective Vision.

73. Illustrated by the findings in the course of routine medical inspection in 24 representative areas.

Area.	Total Number of Children inspected at Routine inspection	Number of cases of Defective Vision referred for		Total.	Per- centage.
		Treat- ment.	Observa- tion.		
Counties—					
Bedfordshire	5,020	185	156	341	6·8
Cumberland	7,521	326	221	547	7·3
Derby	26,037	1,281	1,841	3,122	12·0
Durham	38,298	2,766	1,076	3,842	10·0
Hants	7,739	179	170	349	4·4
Kent	21,947	916	206	1,122	5·1
Lancashire	42,784	1,813	1,856	3,669	8·6
London	240,143	18,629	7,511	26,140	10·9
Carmarthenshire	10,542	647	378	1,025	9·7
County Boroughs—					
Barrow-in-Furness	4,145	466	—	466	11·2
Birmingham	45,105	2,984	1,258	4,242	9·4
Blackpool	2,415	194	39	233	9·6
Bootle	4,023	428	71	499	12·4
Bradford	9,491	537	658	1,195	12·6
Bury	2,384	158	74	232	9·7
Carlisle	2,483	179	238	417	16·8
Chester	2,039	161	98	259	12·7
East Ham	6,569	438	1,208	1,646	25·0
Ipswich	2,912	288	103	391	13·4
Kingston-on-Hull	15,617	546	300	846	5·4
Leeds	22,152	2,193	192	2,385	10·8
Liverpool	35,608	1,879	1,934	3,813	10·7
Manchester	33,307	2,920	599	3,519	10·6
Sheffield	24,248	1,343	61	1,404	5·8

* See also Report of Departmental Committee on *Causes and Prevention of Blindness*, Ministry of Health, 1922.

It will be seen from the figures in the table above that the average percentage of defect lies somewhere between 10 and 15 per cent.

The returns in respect of the children in the Metropolis show that of the 135,227 children examined in the eight year and twelve year old groups, 14,075 (10·4 per cent.) were referred for refraction for visual defect. The following table sets out the figures for visual acuity from 1918-1922; the first column in each case refers to children who readily pass the Snellen test at 20 feet, the second column those who just fail, and the third column those with relatively serious visual defect.

Year.	Eight years old.						Twelve years old.					
	Boys.			Girls.			Boys.			Girls.		
	Nor-mal.	Poor.	Bad.	Nor-mal.	Poor.	Bad.	Nor-mal.	Poor.	Bad.	Nor-mal.	Poor.	Bad.
1918...	38.2	42.0	19.7	34.7	43.5	21.8	52.6	25.7	21.7	46.8	29.1	24.1
1919...	39.7	40.2	20.1	35.6	42.8	21.6	51.6	26.9	21.6	47.8	29.5	22.7
1920...	42.4	36.7	20.9	35.9	38.5	22.6	55.0	24.3	20.7	52.2	25.7	22.1
1921...	47.1	33.5	19.4	43.7	35.1	21.2	56.9	22.8	20.3	52.0	25.9	22.1
1922...	46.7	35.5	17.8	44.8	36.0	19.2	57.1	22.6	20.3	52.5	25.3	22.2

The heavier incidence of visual defects upon girls compared with boys is still evident, and can only be ascribed to the difference in occupational pursuits followed by the two sexes during childhood, both in and out of school. It is satisfactory to note that the disparity between the sexes is tending to diminish, particularly at the older age. Spectacles were prescribed in 24,407 cases, and of these 21,266 obtained them.

74. At *Sheffield*, Dr. Chetwood reports that approximately 10 per cent. of the children examined were found to have sight so defective as to need immediate attention, and this figure represents the experience both in town and country, though in rural districts it is usually lower, except for myopia.

75. Mr. Bishop Harman has recently again drawn attention to the close relation between dirt and eye disease, a matter to which I referred in this report in 1913. He made investigations as far back as 1903 which showed an increased incidence of eye disease in unclean schools. "Dirt and disease," he says, "are almost interchangeable terms. There is perhaps no range of disease which shows a closer correspondence with dirt than the surface diseases of the eye. Prevalence of eye disease—the various forms of conjunctivitis and lid infections, may be taken as a barometer of that most distinguishing feature of civilisation, personal cleanliness."*

76. Dr. F. W. Edridge-Green regards the exciting causes of myopia to be certain diseases, such as measles, whooping-cough and bronchitis, and certain actions which produce sudden increase of intra-ocular pressure, such as coughing and lifting heavy weights in a stooping position, especially in those not accustomed to exercise. He states that the occurrence of myopia as a sequela of measles is very clear. As regards prevention he considers those exercises which cause increased

* *Proceedings of the Royal Society of Medicine*, Vol. XVI, No. 7, 1923.

intra-ocular pressure and lead to myopia should be avoided in the training of children and by those whose exercise is irregular; also that exercises should be performed in the erect position with eyes looking forward.*

77. Provision for the *treatment of defective vision* was made in 1922 by 293 Local Education Authorities. There were upwards of 500 ophthalmic surgeons engaged during the year, and the work was carried out principally at the School Clinics. In other cases arrangements were made by the Local Education Authority with hospitals. Nearly 300 Authorities made special provision for supplying spectacles to the children at contract rates. Following-up arrangements should be made for re-examination at stated intervals so that continuity of treatment may be secured. Facilities for the repair of spectacles are provided in some areas. Valuable leaflets of advice for parents and teachers have been issued by many County Councils, including *London, Durham, Devon, Cheshire and Shropshire*.

Squint in Children.

78. Squint is a form of defective vision which should receive more attention. Medical inspection reveals its prevalence and draws the attention of the parent to its handicap as a disability. In *Liverpool* 2·85 per cent. of the children examined suffer from it, more than 1,000 were detected in routine examination in 1922, and upwards of 1,100 more cases were dealt with as "specials." There were 1,100 cases at *Sheffield*, and in many other towns it constitutes a fifth to a quarter of the defects of vision.

79. In regard to *frequency* the following table indicates the numbers and percentages of children examined on the occasion of routine examination (on entrance into school, at the age of eight years, and at the age of twelve years or thereabouts) who had squint in 1922 :—

	No. of children inspected	Referred for treatment.		Referred for Observation.	
		Number.	Per-centage.	Number.	Per-centage.
Counties (59 areas)	628,637	4,711	0·75	1,725	0·27
London	240,143	1,399	0·58	593	0·25
County Boroughs (80 areas)...	536,572	5,338	0·99	1,696	0·32

This gives 15,462 children having squint out of a total of 1,405,352 children examined, or 1·1 per cent.

80. Squint is rather a serious disadvantage in childhood and adult life. The æsthetic effect of a "cast" in the eye may prove an effective handicap to certain forms of employment, but the loss of vision in the squinting eye—the result rather than the cause of the squint—is the more serious

* *The Cause and Prevention of Myopia.* By F. W. Edridge-Green, C.B.E., M.D., F.R.C.S., *Lancet*, Vol. I, 1921, p. 469.

feature. After a review of many cases Mr. Claud Worth, F.R.C.S.,* declares that an infant with good vision in each eye who develops a constant unilateral squint at the age of 6 or 8 months will, in the absence of proper treatment, become rapidly blind in the squinting eye, the power of central fixation being often lost in 8 or 10 weeks. If the onset is at, say, 18 months of age, this power is lost in approximately 6 months, while if at three years of age central fixation is seldom quite lost in less than a year. Thus, the *age of onset* has special significance. The same authority gives an analysis of 1,017 cases of unilateral convergent squint, by far the most frequent form; of these 134 appeared before the child's first birthday, 186 between the ages of 1 and 2, 247 between 2 and 3, and 189 between 3 and 4. In other words, in nearly 75 per cent. of the cases the squint appeared before the end of the fourth year, and in less than 7·5 per cent. it was delayed until after the sixth year.

These figures illustrate the fact, familiar to us in the case of other defects and diseases, that the ailment is well established before the child comes to school, and that then the time has passed in many, perhaps even in the majority, of the cases, for a complete cure of the condition.

81. There are several *clinical variations* of convergent squint the recognition of which is important from the point of view of prognosis and treatment, and when estimating the apparent results of different forms of treatment. Mr. Worth classifies them as (i) occasional squint, which may be premonitory of a future permanent squint or may only last a few months; (ii) constant unilateral squint, constituting the large majority of all cases of convergent squint; and (iii) alternating squint which may be either accidental or established. In the earliest stages of the defect the squinting eye has the power of central fixation and the vision is nearly always good in both eyes. Congenital amblyopia was formerly considered a common occurrence, but more accurate investigation of the refraction of infants has shown that it is rare. If untreated the tendency is for the squint to continue to develop up to the age of puberty, while later in life it may disappear.

82. Though squint cannot be said to be caused by an error of refraction it is common for a refractive error, usually hypermetropia and hypermetropic astigmatism, to accompany the squint. In some cases the presence of this error of refraction may indeed precipitate the deviation. Nevertheless, hypermetropia of a severe degree is common without evidence of squint, and in fact a squint develops as readily in association with low as with high degrees of hypermetropia.

83. The *essential cause* of squint is not always one and the same. An inborn predisposition often exists, and heredity is associated with about one half of the cases. It has analogies with stammering or left-handedness; in other words, the cause may be described as a defect of the fusion faculty. Normally, binocular vision comes into play by the end of the first month of life; but this fusion of images may develop late or may even never develop. Again, many accidents, habits or maladies of infancy may disturb the equilibrium of the convergence centre and so precipitate squint, and among them the specific fevers, especially measles and whooping cough, hold high place. Forms of mental disturbance, especially shock of whatever origin, pain and irritation, such as that

* *Squint: Its Causes, Pathology and Treatment.* By Claud Worth, F.R.C.S.

caused by teething, injuries and strain associated with the commencement of school life, may all be operative factors. Mr. Bishop Harman thus sums the matter up: "Once binocular vision is established it is rarely disturbed, but should the control of the brain be weak a very little ocular or physical disturbance will cause a squint to appear."

84. Mr. Percival J. Hay, one of the ophthalmic surgeons to the *Sheffield* Education Committee, has especially interested himself in the aetiology and prevention of convergent concomitant squint.* He investigated 597 cases and analysed the alleged or apparent precipitating cause in 343 of these. The results of his investigations lead him to lay special stress on measles as a precipitating cause. He is of the opinion that it holds sway above all other causes even after making due allowance for the frequency of measles among children.

85. Dr. Kirk, the oculist to the *Bridlington* Education Committee, in discussing sight efficiency in the general population, as the result of the analysis of 30,000 recruits, points out that concomitant convergent strabismus is a condition essentially of civilisation and of large crowded cities, and that in the Far East squint is almost invariably secondary to gross lesions such as ulcerative conditions and specific disease rather than to the more subtle causes prevalent in the West.

86. The *treatment* of squint must depend in large measure upon the stage at which the defect is found, the end to be attained, and the practicability of carrying out desirable or necessary measures. Usually when first seen by the school doctor the condition is well established and the vision defective or lost. In the most advanced cases little good can be expected from treatment other than the æsthetic effect of operation. In other cases benefit may result from the prescription of appropriate glasses; the vision of the deviating eye may be improved and the squint itself may be lessened or completely cured. Dr. Duncan Lawrie (Assistant School Medical Officer, *Stoke-on-Trent*) reports that of 147 cases of convergent squint which received treatment, glasses were prescribed in 113 cases. In 11 of these the prescription was on account of the defective vision of the "fixing" eye, the squinting eye being past remedy, leaving 102 as the number of squint cases treated by glasses. In 77 of these glasses were obtained and in 28 cases the squint was cured, leaving 49 not yet cured.

The covering up of the fixing eye is strongly recommended by some ophthalmic surgeons, while its value is much doubted in practice by others. Under favourable conditions no doubt much good or a lasting cure may be obtained. The occlusion of the fixing eye should be complete in the first instance; under the ordinary conditions of home and school this condition is difficult to fulfil. Frequent supervision by the oculist is necessary. After a period, intermittent occlusion may be practised, but this apart from the preliminary complete occlusion seems of little value. Another measure, which may be useful in appropriate early cases, is the instillation of atropine into the fixing eye. This may be practised with the occlusion method. Here again, frequent supervision, an intelligent parent and amenable patient are required. For young children under the age of four years and under favourable conditions this may produce satisfactory results.

* *Transactions of the Ophthalmological Society*, 1922, Vol. xiii.

Operative treatment may be valuable in long-standing cases, and many ophthalmic surgeons advocate its use much more widely than it at present obtains. To be of service it must be resorted to in the case of quite young children. In any event, full trial should first be made of other measures.

87. A consideration of these facts demonstrates the need for the *earliest possible detection and treatment*. Squint takes its place among various other disabling conditions of childhood dealt with in this and previous reports. It is a disability which establishes itself owing to the failure to secure early detection and follow it by appropriate treatment. Its prevention as a deformity lies outside the age limits of the school medical service proper, and presents, unfortunately, serious difficulties in its realisation. Nevertheless, in many areas a considerable number of children of four, if not of three, years of age now come under the purview of the school doctor, and every effort should be made to secure appropriate and persistent treatment. It is practicable to prescribe glasses at a very early age, and it is usually found that the risks caused to the young child by wearing glasses are negligible. In those areas where the infant welfare service is well developed, and children are followed up until old enough to enter school, it should be possible to detect early cases, if health visitors, school nurses, and teachers are on the look-out for them, and bring them promptly to the notice of the ophthalmic surgeon. The school medical service, especially in urban areas, presents an unrivalled opportunity for determining many points in connection with the origin, treatment and natural history of squint. It should not be too much to expect that, in conjunction with agencies dealing with infants, the number of children handicapped during school and after life by this disability will largely decrease.

Tuberculosis.

88. Tuberculosis in an active and obvious form is not of frequent occurrence among children of school age. The following table summarizes the returns furnished by Local Education Authorities throughout the country in respect of the number of children ascertained during 1922 to be suffering from Pulmonary Tuberculosis, or from crippling due to Tuberculosis. The mortality returns of tuberculosis in childhood will be found in the Appendix.

	Attending Public Elementary Schools.	Attending Certified Special Schools.	In other Institu- tions.	Not at School.	Total.
Pulmonary Tuberculosis	12,177	1,091	1,763	4,766	19,797
Crippling due to Tuberculosis.	5,603	2,220	1,655	2,239	11,717

89. It may be assumed that the children suffering from pulmonary tuberculosis in attendance at a public elementary school were not in a state likely to favour the spread of disease, otherwise they would have been excluded under the provisions of the Code. It is the 7,620 not in attendance at the ordinary schools of whom it may be presumed that

they are suffering from the disease in an active form, and this number, compared with the school population, yields a result of about 1·5 per 1,000. The matter has been reported upon in detail by a number of School Medical Officers during the year under survey. In *London*.—

“Arrangements have been in operation for some years for co-operation between the school medical service and the tuberculosis dispensaries for the detection of early tuberculosis in children and for the observation of doubtful cases by the school medical officer at the schools.

“A scheme has been put into operation during the year with a view to the earliest possible diagnosis of tuberculosis in children. For this purpose systematic examination and supervision of child contacts is essential. To effect this the tuberculosis officers have been requested to fill up a card for every unsatisfactory child, whether a contact or not, who, after observation at the dispensary, is considered to be probably non-tuberculous but who requires supervision; for all child contacts who on the first examination appear healthy, and for all other contacts who have not been examined. The cards are then sent to the divisional medical officer, who arranges for the supervision of these children in the schools. Cases, seen by the assistant medical officers at school medical inspections, which appear to be tuberculous are referred by them to the dispensary, and the result of examination by the tuberculosis officer is communicated to the assistant medical officer. The cases are reviewed once a year at a conference with the tuberculosis officers concerned.”

90. Dr. Chetwood (*Sheffield*) exhibits a return giving the rates of exclusion per 1,000 in the larger Elementary Schools of the city, which show great differences in incidence.

Group A includes schools with the lowest incidence of pulmonary tuberculosis.

					1921.	1922.	Mean rate.
School (1)	...	...	...	...	1·7	2·4	2·1
School (2)	...	...	...	...	0·4	3·2	1·8
School (3)	...	...	...	...	1·5	1·9	1·7
School (4)	...	...	...	...	0·7	0·8	0·75

Group B includes schools with the largest incidence.

					1921.	1922.	Mean rate.
School (5)	...	...	...	...	15·5	16·37	15·9
School (6)	...	...	...	...	11·7	18·52	15·1
School (7)	...	...	...	...	14·8	13·9	14·3
School (8)	...	...	...	...	11·2	11·0	11·1

Some light was cast upon these differences by the findings of routine inspection, which showed :—

					Group A (percentage).	Group B (percentage).
Unsatisfactory footgear	...	...	...	...	2·4	7·8
More than three decayed teeth	...	...	...	...	29·7	45·4
Tonsils enlarged	...	...	...	...	17·2	19·3

Unsatisfactory footgear implies poverty, and, as might be expected, the schools where the children are worse shod show a high degree of poverty.

91. Dr. Meredith Young (*Cheshire*) illustrates similar findings from the records over a number of years of 1,247 children in seven large schools where there is little or no poverty, in comparison with the records of 813 children from four large schools where there is a fair amount of poverty. In the former, ascertainable tuberculosis prevails to the extent of 4·8 per 1,000, in the latter 8·6 per 1,000. The incidence of bad foot-gear increases sevenfold in the poor schools as compared with the better schools. Strangely enough, cases of very bad dentition are twice as frequent in the better class schools.

Institutional Treatment.

92. *For children suffering from Pulmonary Tuberculosis.*—Six Local Education Authorities maintain schools—nine day and one residential school. In addition, fifteen residential institutions provided by Local Sanitary Authorities and twelve provided by voluntary managers are approved by the Ministry of Health for the treatment of tuberculosis. All the thirty-seven institutions have been certified by the Board of Education as Special Schools.

93. *For children suffering from Non-pulmonary Tuberculosis.*—One Local Education Authority maintains two day schools certified by the Board as Special Schools. In addition, three residential institutions provided by Local Sanitary Authorities and twenty-four provided by voluntary managers have also been certified by the Board as Special Schools. The three Local Sanitary Authorities' institutions and nineteen of the twenty-four voluntary institutions are also approved by the Ministry of Health for the treatment of tuberculosis.

Medical Inspection in Secondary Schools.

94. The development of the School Medical Service in Secondary Schools is necessarily retarded at present owing to financial conditions, but brief reference must be made to the findings of medical inspection in these schools. Of the 145 Local Authorities charged with the duty of medical inspection 122 have schemes more or less in operation. The number of Secondary Schools medically inspected in 1922 was upwards of 850, and the number of pupils medically examined was approximately 115,000. The net expenditure for 1921–22 was approximately £50,000 and the estimated expenditure for 1922–23 is about £66,000.

95. A number of School Medical Officers include in their reports particulars of the medical inspection and treatment of children attending Secondary Schools. The work is carried out on the same lines as in Public Elementary Schools—inspection takes place in school hours, on school premises and on the Board's schedule issued in 1908.

96. By an Order dated 23rd January, 1920, the Board directed that the medical inspection of pupils should take place (i) during the first term after their admission to the School or Institution, (ii) in each subsequent year of their age during the period of attendance, except that provision is not required to be made for this annual medical inspection of pupils below the age of 12. Grants are payable to Local Education Authorities in respect of their expenditure on the medical inspection and treatment of pupils in Secondary Schools and other places of Higher Education. These grants are calculated at one-half of the net expenditure of the Authority.*

In a Circular dated March 31st, 1920, the Board indicated the lines upon which the inspection should proceed.

On account of the critical period of adolescence considerable importance was attached to the need for bringing all pupils annually, as a matter of routine, under medical supervision. The degree of completeness of the medical examination would naturally vary. It should be complete at the age of 12 (modified, however, by the circumstance of a

* See Grant Regulations, No. 20.

recent full medical inspection in the elementary school), and it should again be equally thorough at the age of 15. It was advised that the visits to these schools should be at least terminal, and where practicable, especially in the case of large schools, monthly.

A model schedule was set out for the convenience of Authorities, which followed closely the lines of that used in elementary schools, but included additional headings to cover certain points of special importance owing to the age and circumstances of the pupils. It was advised that a woman doctor be employed for the medical inspection of the girl pupils.

In regard to the treatment of defects discovered, the Circular pointed out that, as a rule, the parents and pupils would be able to make their own arrangements, but that nevertheless, in regard to particular types of defect, it might be desirable if not necessary to make available the arrangements already in force for the treatment of children from the elementary schools.

Finally, the Circular laid emphasis upon this work of medical inspection forming an integral part of the school organisation. The duties of the school doctor should not be limited to the inspection and treatment of the pupil, but he should be able to afford valuable advice and help in regard to such matters as the health of the pupils as a whole, the hygiene of the school, the character of the physical training including any remedial exercises undertaken, and such more directly education problems as those associated with over-pressure, the occurrence of eye strain, homework.

Broadly, it may be said the work is following the lines laid down in the Circular. The reports to hand necessarily vary much in their completeness in accordance with the extent to which the work has proceeded.

97. The following table sets out the defects found in 35,313 children in Secondary Schools in twenty representative Educational areas (excluding London).

Defect.	Number of Children with Defects.	Percentage of Children with Defects.
Malnutrition	1,281	3·63
Skin Disease	505	1·43
Defective Vision (including Squint)	6,040	17·10
Eye Disease	407	1·15
Defective Hearing	414	1·17
Ear Disease	370	1·05
Nose and Throat Disease	3,707	10·49
Enlarged Cervical Glands (non-tubercular)	1,220	3·45
Defective Speech	193	0·55
Dental Disease	8,755	24·79
Heart Disease—		
Organic	299	0·85
Functional... ..	697	1·97
Anæmia	1,038	2·94
Lung Disease (non-tubercular)	348	0·99
Tuberculosis—		
Pulmonary definite	1	—
„ suspected	27	·08
Non-Pulmonary	56	·16
Disease of the Nervous System	484	1·37
Deformities	3,218	9·11
Other defects and diseases	3,437	9·73

Figures for the above Table are compiled for the following Local Education Authorities:—Devon, Kent, Middlesex, Northumberland, Suffolk (East), Warwickshire, Yorks (North Riding), Yorks (East Riding), Bradford, Leeds, Liverpool, Sheffield, Cardiff, Burnley, Croydon, Derby, Halifax, Huddersfield, Middlesbrough, Southampton.

It will be seen that the three defects most marked in Elementary School children (defective vision, dental decay and diseases of the nose and throat) are likewise the commonest among Secondary School children. Deformities are relatively high and suggest that physical training and games are neglected. Indeed, Captain Grenfell has found that physical training in many Secondary Schools is exceptionally bad and unsatisfactory.

98. In *London*, Sir William Hamer reports that—

“During 1922 the pupils at secondary schools were inspected as a routine measure at the ages of 12 and 15. 2,362 boys and 2,086 girls were inspected at these ages, and 1,768 boys and 1,788 girls were in addition seen as special cases, making 8,004 examinations in all. Further, 937 male and 789 female students were inspected at trade schools maintained or aided by the Council, in all, therefore, 11,073 pupils and students were medically examined in the various types of higher education institutions. Although a picked class from a medical point of view, numerous physical defects were found amongst them, 8 per cent. were undernourished, 2 per cent. deficient in personal hygiene, 25 per cent. suffered from dental decay. Although 16 per cent. wore spectacles, 29 per cent. nevertheless had less than the normal acuity of vision, 1·7 had ear diseases or hardness of hearing, 4·7 per cent. defect of the circulation, 3·8 per cent. were anæmic and 11·5 per cent. showed postural deformities.

“All these conditions, if unattended to, lead to strain and inefficiency in later life with consequent waste of the advantages bestowed by higher education. The importance of physical development and the establishment of perfect bodily health as a part of educational effort is still not grasped as it should be, and education is still to some extent overshadowed by the delusion that *mens sana* and *corpus sanum* have no relation one to the other.

“The examination of the 12 year old group of children in secondary schools permits of a comparison of their condition with that of the children of the same age in elementary schools. The average nutrition of the secondary school children is superior to that of the elementary school children on the whole, but the percentage of children definitely undernourished is, contrary to expectation, rather higher amongst the former. While 5·8 per cent. of boys and 5·2 per cent. of girls in the elementary schools are marked as undernourished, 7·2 per cent. of boys and 13·7 per cent. of girls in secondary schools are so marked. Personal cleanliness is much superior in the secondary schools. 3 per cent. of the girls are found unsatisfactory in this respect compared with 22·5 in the elementary schools. 76·7 per cent. of boys and 71 per cent. of girls in the secondary schools have sound teeth compared with 65·3 and 67·5 per cent. respectively in elementary schools. The eyesight of the secondary school children is much superior at the age of 12 to that of the elementary school children, 72·3 per cent. of girls attaining normal vision as compared with 52·5 per cent. only in the elementary school girls. It is noted that 10 per cent. of secondary school boys at 12 are wearing spectacles and 13·3 per cent. of girls.

“The excess of visual defect, of heart strain and of incipient deformity is as marked in secondary as in elementary school girls. Comparing the 12 year old children in secondary schools with the 15 year old pupils, it is found that these defects in girls still further increase; for instance, while the percentage of girls with perfect vision sinks between 12 and 15 from 72·3 to 69·9, the percentage wearing spectacles increases from 13·3 to 17·3; and while 4·9 per cent. are suffering from anæmia at 12, 6·3 per cent. are suffering at the age of 15.

“The strain of education falls very heavily upon girls at this important physiological age, and more consideration requires to be given to periods of recreation and their proper utilisation.”

99. The health of the children in attendance at Secondary Schools has assumed a prominent position in the course of the year in connexion with the report of the Consultative Committee of the Board of Education on the Differentiation of Curricula between the Sexes in Secondary Schools.* A considerable volume of evidence was tendered to the Committee by competent witnesses which emphasised the physical and mental differences between boys and girls. These were considered by the Committee who included among their recommendations the following observations :—

“ That more attention should be devoted by parents, head mistresses, and school doctors to the possibility of taking suitable precautions for the protection of girls against physical fatigue and nervous overstrain.

“ That in day schools attended by girls, steps should be taken to reduce the amount of preparation required from girls, which, in some instances, is at present excessive in view of the relatively heavy domestic duties often performed by them in their homes.

“ That systematic enquiries should be undertaken in order to collect trustworthy data on the question of the relative susceptibility of boys and girls between the ages of 11 and 18 (or 19) to mental and physical fatigue, both in ordinary school work and in games.

“ That further enquiries should be undertaken with a view to ascertaining what games and physical exercises are most suitable for girls of varying ages, more especially day girls, in the different types of schools.”

The Committee also draws attention to the present danger to health connected not merely with the strain of examinations, but with the maintenance of the old tradition of “ accomplishments ” in addition to the ordinary boys’ curricula. The congestion of studies results in the absence of freshness and initiative, for many pupils have no free time and few facilities for their own individual interests. They note also the relatively heavy household duties devolving on many girls.

* Report of the Consultative Committee on Differentiation of the Curricula for Boys and Girls respectively in Secondary Schools, 1921. (Price 2s. 9d. net.)

IV.

RESEARCH WORK IN SCHOOL MEDICAL SERVICE.

100. From the commencement of statutory medical inspection I have urged the importance of the School Medical Staff of the Local Education Authorities undertaking research work. The opportunities afforded by organised medical study of the children in the Elementary Schools are exceptionally good, and there is great need of investigation into many of the conditions presented. For, first, by this means we may add to knowledge and make it more accurate; and, secondly, we may improve our methods of inspection and treatment, and thus enhance their advantage to the child.

It has frequently been said that the work of the School Medical Service is either so heavy or so monotonous that the medical staff have no opportunity for research. Much, of course, depends upon what is meant by "research." Clearly, the medical staff cannot neglect their routine duties and devote themselves to laboratory investigations. But research is not confined to laboratory work, and, indeed, the most valuable research work can never be so confined. It must be checked in the "field," and there also it must be applied if it is to yield practical results. There is ample opportunity, as hundreds of enquiries since 1908 have proved, for school doctors to undertake definite pieces of research work in the course of their duties. Where there is a will there is a way; where there is keenness of observation, and growth and fertilisation of ideas, there is in this service quite an extraordinary opening for investigational study. Indeed, I would go a step further and say that no scientific man or woman engaged in the medical examination of thousands of children should be other than an investigator. The spirit of research and enquiry should be alive and active; it should be encouraged by Authorities; and it should inspire the necessary routine work with high purpose and scientific observation.

101. Every School Medical Officer should scrutinize his plans and his arrangements to see how they can be made to yield valuable knowledge for the future, how far his labours are *creative*. For it is certain we are greatly in need of more accurate knowledge on many matters which concern both the science and art of our work. Consider the following dozen subjects as illustrations:—

- (i) Nutrition and its proper standards;
- (ii) the physiological range of physique and function in the normal child;
- (iii) dietaries, those which build up and those which injure the child;
- (iv) occupation of the child in relation to health and education;
- (v) the production of fatigue and over-pressure, physical and mental, in children of both sexes and aged 11–18 years;
- (vi) mental defect, forms and tests;
- (vii) causes of dullness or backwardness and methods of remedy;
- (viii) measles, tuberculosis, rickets;
- (ix) the physiology of exercise and games for boys and girls;
- (x) psychology of intellectual and emotional differences in boys and girls, and relation to education and achievement;
- (xi) disease of the mucous membranes of the ear, nose, mouth or throat;
- (xii) vision of children at 5 years and causes of its subsequent deterioration.

None of these subjects is new, but they all demand infinitely more exploration, and they are all of immediate importance to the well-being of the child and the advance of Medicine. There are, it is obvious, two ways of organising research into these and kindred subjects. First, the School Medical Officer may undertake or arrange for investigations similar to the two examples quoted below (paragraph 103). Secondly, it may be desirable to organise investigation in a wider and more comprehensive way, as part of a general inquiry, by co-operation with other School Medical Officers or with the Board's Medical Officers, and by arranging collateral research in laboratory and hospital. Where School Medical Officers find that local circumstances and conditions make such joint inquiries desirable and practicable, I shall be glad to confer with them with a view to such co-operation as I have suggested and the consideration of facilities.

102. The following is a list of the more important investigations carried out during 1922 :—

Area.	Subject of Inquiry or Report.
Bath	Application of Intelligence Tests to school children. (Dr. R. E. Thomas).
Cardiff	Syphilis Insontium in school children. (Dr. H. Sheasby).
Cumberland	Dull and backward children. (Dr. Gibson).
Devon	Dull and backward children. (Medical Staff).
Durham	Dull and backward children. (Dr. Donald). (1) Vaccination (Dr. Stirling); (2) Heart Disease and Rheumatism (Dr. Mabel C. Clark).
Glossop	The effect of lead on school children. (Dr. Milligan).
Kent	Occurrence of Goitre amongst school children in parts of Kent. (Dr. S. Tucker). Breathing examinations in schools. (Dr. Selfe). Postural deformities. (Dr. Mary O'Connor).
Leeds	Subnormal Nutrition. (Dr. A. Wear).
Leicester	Physical Fitness of the boys attending the Wyggeston Boys' School and the Industrial School. (Dr. A. Warner).
London	Goitre. (Dr. C. N. Atlee). Delinquent Children. (Drs. Shrubsall and Williams). Chorea. (Dr. Chaikin).
Manchester	The Porteus Maze Tests. (Dr. Herd).
Middleton	Conditions associated with Retardation in school children. (Dr. S. T. Beggs).
Monmouthshire	Census of Blind Persons. (Dr. Harold Ellis). Mentally Defective Children. (Dr. Davies). Effects of Industrial Depression on Children's Health. (Dr. Werden).
Norfolk	(1) Jaw Deformities. (2) Dull and backward children. (Dr. J. C. T. Nash).
Sheffield	Medical Tuberculosis in the Public Elementary Schools. (Dr. Campaign).
Staffordshire	Dental Conditions and Unemployment. (Dr. W. D. Carruthers).
Stoke-on-Trent	Backward and Mentally Defective Children. (Dr. Hughes).
Swindon... ..	Enlarged Thyroid Gland. (Dr. D. Brewer).
Warrington	Relationship between home conditions and the mental and physical capacity of school children. (Dr. G. W. N. Joseph).
West Ham	Results of operations on Adenoids. (Dr. Skerrett).
Wiltshire	Investigation by means of intelligence tests. (Dr. Bowes).
Wolverhampton	Chorea Cases. (Dr. Kilkelly).

103. It is impossible to quote the records and findings of these enquiries in the present report owing to their length, but I may cite the outstanding features of two investigations as illustrations. The first is by Dr. Newsholme, School Medical Officer of the *North Riding* (now appointed School Medical Officer of Croydon), on *Rickets*, and it will be observed that this research was done as part of the routine work of the year.* The other paper is on a domestic outbreak of *Encephalitis lethargica* at Eastbourne by Dr. A. C. Parsons, a medical officer of the Ministry of Health.

I.

ENQUIRY INTO THE PREVALENCE OF DEFORMITIES RESULTING FROM RICKETS.

By H. P. Newsholme, M.A., M.D.Oxon., M.R.C.P., D.P.H.

County Medical Officer of Health for the North Riding of Yorkshire.

During 1922 an enquiry has been made throughout the North Riding of Yorkshire education area into the prevalence among elementary school children of deformities ensuing from an attack of rickets earlier in life.

Crippling due to Rickets.—Analysis of the causes of crippling in the crippled children in the North Riding illustrates the part played by this common and too lightly regarded disease in injuring the child-population. Out of the 262 known cripples under the age of 16, 14 per cent. are crippled as a result of an attack of rickets in early childhood.

Method of Enquiry.—The enquiry was limited to children examined in detail during routine medical inspection in public elementary schools, and did not include special cases examined for particular reasons. A fair sample throughout the school population was thereby obtained, unselected in all respects except in regard to age. The children seen were chiefly of the age-groups 5-6, 8-9 and 12-13 years, together with a relatively small number at other ages.

In connection with each child, the medical officer concerned took special note of the presence or absence of deformities due to rickets. For the purpose of the enquiry these were classified as follows:—

- (a) "Beading of ribs."
- (b) Enlargement of ends of long bones (wrists, ankles, knees).
- (c) "Bossing" of forehead, "square-head."
- (d) Gross deformity of chest (pigeon-breast, lateral sulcus, etc.).
- (e) Deformities of long bones:—
 - 1.—Knock-knee.
 - 2.—Bow-leg.
 - 3.—Other deformities (spine, etc.).

The results for each school were tabulated by the medical officer, on a form drawn up for the purpose according to sex, age, type of deformity, and standard in school. Wherever a weighing machine and measuring rod were available, the weight and height of each child showing a rickety deformity were also recorded.

At the same time questions were put to each parent attending at medical inspection, as to the past history of the children in the family in respect of rickets. This was done after the completion of medical inspection of the child, in order to prevent bias during examination.

The enquiry has established the fact that in the North Riding 3·9 per cent. of the boys and 1·7 per cent. of the girls in public elementary schools show some degree of deformity due to past rickets.

* School Medical Officers should also refer to the following recent special reports of the Medical Research Council: *Relative Importance of Environment and Diet as Factors in Causation of Rickets* (Corry Mann), 1922; *Ætiology and Pathology of Rickets from an Experimental Point of View* (Korenchevsky), 1922; *Studies of Rickets in Vienna* (various Authors), 1923.

In a number of cases this deformity was relatively slight, and important chiefly as indicating that the child was likely to be affected in other ways by the disease. Such deformities, however, as knock-knee, bow-leg, pigeon-breast, and deformed spine are of material concern to the future prospects of the child. It was found that *2·1 per cent. of all the boys and 1 per cent. of all the girls examined showed one or other of these more serious deformities of chest, lower limbs, or spine*, as a consequence of past rickets.

Thus: *one boy in every fifty, and one girl in every hundred, show a marked bony deformity due to rickets: if slighter cases are included, one boy in every twenty-four, and one girl in every sixty show some degree of deformity due to that disease.*

Relative Frequency of the Various Types of Deformity.—The relative frequency of the various types of defect differs with the sexes:—

In both boys and girls the commonest defect was a deformed chest (pigeon-breast)—occurring in 35 per cent. of the total in boys, 28 per cent. in girls.

The next most frequent defects were:—In boys, “beading” of the ribs (24 per cent.), and “bossing” of the head (19 per cent.); in girls, “bossing” of the head (26 per cent.), knock-knee (16 per cent.), and bow-leg (13 per cent.).

The only point to which attention need be drawn is the remarkably larger proportion of deformed chests in the country than in the larger towns, in both sexes (in boys, 43 per cent. in country compared with 23·9 per cent. in towns, and in girls, 34·9 in country and 11·1 per cent. in towns. This is not a result which would have been expected. The greater prevalence of bronchitis and other lung diseases in towns would lead one to expect a greater prevalence in towns of deformed chests resulting from the physical strain of such diseases affecting a child whose ribs are softened by an attack of rickets. No explanation can be offered of this anomaly, which moreover does not seem to be due to a special bias on the part of one or other of the inspecting medical officers.

Effect on Physique.—It will be seen that, with two unimportant exceptions, the heights and weights of children showing signs of past rickets were uniformly below the level reached by the children as a whole, at each age-period from 3 years to 14 years, and for each sex. The two exceptions refer to two instances in which the weight recorded is based only on the examination of a single child, and these can therefore properly be ignored.

It is clear that *with remarkable uniformity children of either sex suffering from deformities due to past rickets are not so tall and not so heavy as the average for their age; and this poorer physique continues manifest throughout the whole of school-life at the public elementary school.*

It is a fact of very considerable importance that rickets should continue to exert a malign influence long after cure of the disease itself, for a period extending at any rate until the end of school-life. What are the factors causing this continuance of the disability? On the one hand, it is probable that the families in which rickets occurs are on the whole the most ignorant, and frequently the most careless, in respect of such matters as diet and household economy and management. The deficiency in these respects which caused the original attack of rickets may have operated through subsequent years in causing poorer physique by improper feeding, defective supervision of rest or exercise, etc. This may in part account for the continued stunting resulting in later childhood from previous rickets, and in so far as it does so, it is hopeful from the point of view of reaching these families ultimately by the spread of general knowledge of domestic hygiene. On the other hand, the hindrance to growth of the child is undoubtedly in large part due to the direct harm inflicted on the tissues by the disease, by increasing susceptibility to infections of the lungs and of other organs, which would otherwise have been successfully resisted by the child.

Effect on Capacity for Education.—Does a previous severe attack of rickets, indicated by the presence of one or other of the deformities due to the disease, affect the educational capacity of the child? The following table provides an answer to that question. It sets out the case both of boys and of girls, and in each of the age-groups 8-9 and 12-13, children showing evidence of past rickets are educationally backward in comparison with the average child. Thus, among eight-year-old boys:—

Only 30 per cent. of the boys as a whole	} are below
But 44 per cent. of the rickety boys	

Standard II.

Among 8-year-old girls:—

Only 29 per cent. of the girls as a whole	} are below
But 48 per cent. of the rickety girls	

Standard II.

Among 12-year-old boys:—

Only 14 per cent. of the boys as a whole	} are below
But 29 per cent. of the rickety boys	

Standard V.

Among 12-year-old girls:—

Only 15 per cent. of the girls as a whole	} are below
But 41 per cent. of the rickety girls	

Standard V.

The same test has been applied to schools in the larger towns, in the country towns, and in rural areas as separate groups, with results confirming the statement that *children showing deformities due to past rickets are definitely backward in their education, and continue backward throughout school-life, when compared with the average attainment of the children as a whole under the same general conditions of environment.*

The causes underlying this backwardness in education are a matter for conjecture. In the previous section it has been shown that these children are physically stunted in comparison with the normal child, and it has been suggested that the deficiency is due in part to faults in the home environment and in part to the direct damage to the system produced by rickets. The same factors no doubt influence the educational backwardness of these children. They are drawn on the whole from families in which there is less parental interest, or greater parental ignorance of or incapacity for domestic management, than in the population at large. At the same time, the susceptibility to catarrhal conditions induced by rickets lasts for many months after the arrest of the disease, and may very probably last for years, in which case it would interfere with education, partly by causing irregular attendance, and partly by sapping the child's general vitality.

General Conclusions.—It has been shown that rickets has produced some 14 per cent. of the known cases of crippling in children of school age in the North Riding; that in addition a marked degree of deformity due to rickets, stopping short of crippling, is found in 2 per cent. of the boys and 1 per cent. of the girls in public elementary schools; and that the children showing these signs of former rickets are also on the average poorer in physique and more backward in education than the average school child.

The education authority can clearly have no direct control over a disease affecting children before they attain school-age. In order to ascertain whether there are any indirect means by which the education authority can influence the prevalence of rickets, it is necessary to deal briefly with the factors giving rise to the disease.

The Factors giving rise to Rickets are a subject of keen discussion in the medical profession at the present time, and according to individual experience or inclination stress is laid on one or another of several factors, although the great majority recognise the important part played by diet. It will be safe to say that rickets can be prevented if steps are taken to

deal with *each* of these factors, treating all as of importance. They are as follows:—

1.—*Improper diet.* The fault in the diet may be either

(a) Incorrect balance of the various constituents of the diet. A common fault in the diet of children who have developed rickets is the presence of an excess of sugar or starch and a deficiency of fat.

(b) Absence or insufficiency of certain elements known as *vitamines*, one of which is believed to be an essential factor in the prevention of rickets. This vitamine is present in animal fat, dripping, cream, cod liver oil, etc., which foods therefore are important aids both in the prevention and in the cure of rickets.

2.—*Insufficient sunlight*, the child being kept boxed up too much in the house.

3.—*Insufficient airspace*, due perhaps to overcrowding, or to poor ventilation, the latter giving rise to a moist warm atmosphere which is relaxing and debilitating in its effect on the child.

4.—*Insufficient regular exercise.* Experiments on animals suggest a close relation between lack of exercise and rickets in an animal receiving a diet which would otherwise prevent the disease.

5.—*Other severe diseases* occurring in early childhood may so affect the child's powers of digestion as to render a diet normally adequate no longer sufficient, with the result that rickets may develop.

Measures for the Control of Rickets.—Broadly speaking, rickets is to be prevented on the one hand by educating parents on questions of diet and food values, and of the part played by sunlight, fresh air, and exercise; on the other, by improving the home environment in regard to overcrowding and structural defects obstructing ventilation and good lighting in the house.

It is clear that, apart from the duties of the individual citizen, the responsibilities devolve on a number of public bodies at present imperfectly co-ordinated. The local sanitary authority is best able to deal with ventilation, air-space, sunlight, and the structural conditions of the home. The county council, through its Public Health committee, is concerned in that aspect of the work of child welfare centres which deals with the instruction of parents in the proper dieting of infants and young children; while through its health visitors it exercises a quiet but very important influence in educating individual parents in domestic hygiene in their own homes. The Poor Law authorities, in their turn, have their own responsibility in the proper feeding of young children under their charge.

The action open to the education committee towards the same end is necessarily very indirect and limited in scope and needs only brief summary. The education committee cannot readily instruct the present generation of parents; but it is instructing, through its cookery centres, a proportion of the mothers of the next generation in the principles of diet, of cooking, and of household management. Through the influence of well-ventilated and well-lit schools the education committee will—though again partially and imperfectly—by daily example impress on children, the parents of the next generation, the importance of ventilation and lighting for health. Through its systematic physical training in schools it is gradually inculcating the value of regular and ordered exercise as a factor in health. In two other respects the North Riding education committee is taking a decidedly more active, though still indirect, part in the control of the disease:—

(a) It is lending its medical officers to the Public Health committee for the purpose of giving instruction to mothers attending welfare centres; thereby a very important form of education is being provided for the particular group of mothers who attend at welfare centres.

(b) Through its nursing scheme, prepared jointly with the Public Health committee, the education committee has appointed a number of nurses, both whole-time and part-time (district nurses), who in their capacity as school nurse help to prevent ill-health during school-life, while as health visitors they have a wide influence in preventing the occurrence of diseases, such as rickets, in early childhood long before the education authority can get direct access to these cases. The health visitor's influence in the home is the key to the control of such conditions as rickets. The welfare centres deal with *some* of the poorer class; the health visitors, if provided in sufficient number, can deal with *all* the poor, in their own home surroundings. It is greatly to the advantage of the education committee, as well as of the Public Health committee, to encourage and to extend this co-operation in respect of nursing.

II.

ENCEPHALITIS LETHARGICA.

A DOMESTIC OUTBREAK AT EASTBOURNE.

By Allan C. Parsons, M.R.C.S., Medical Officer of Ministry of Health.

1. The County Borough of Eastbourne, in January, 1919, furnished the Ministry with one of the earliest instances of multiple infection from encephalitis lethargica. On that occasion a brother and sister, attending the same school by day and sharing the same bed at night, were both attacked with encephalitis lethargica, the boy on January 24th and his sister on February 7th, 1919.*

2. At No. 1, C. Road, which adjoins the street where the two patients mentioned above lived (and still live), the infection of encephalitis lethargica has now shown itself simultaneously in the persons of three brothers. These boys shared a small but well-ventilated bedroom with their father and another brother, while they themselves were all three accommodated in one bed. The family, consisting of two parents and six children, are permanent residents of Eastbourne, living in a comparatively poor quarter of the town though the neighbourhood has no suggestion whatever of slums. E.C. and S.C., aged respectively 13½ and 12, attend the same school while the youngest of the three, R.C. aged 8½, goes to another.

3. On July 4th all three boys took part in a school treat at Hailsham. It was an unusually hot day and the eldest boy found his pleasure in giving help to younger children in the matter of donkey rides; a good proportion of his time was spent running hatless and coatless beside the donkeys, but he alone complained of the heat.

The individual histories, compiled largely from notes supplied by Dr. Willoughby and from local enquiries made by myself are as follows:—

(a) E.C. (aged 13½), described by the Headmaster of his school "as a normal healthy boy and a real sportsman," was quite fit at school on July 3rd. On the 5th of July, the day after the school treat, he attended class as usual but the headmaster was arrested by the boy's appearance and thought his facial expression "the weirdest he had ever seen in a boy." It was examination time and the headmaster was also struck by the boy's poor attempt at writing. E.C. came to school again on the 6th but on the 7th he appeared dull and out of sorts and complained of difficulty in seeing; diarrhoea and vomiting were also present. On the advice of a doctor the lad was kept quiet at home until the 17th when his father brought him to the Clinic at the Town Hall, where Dr. Willoughby first saw him. It was then noticed that he had ptosis on both sides, loss of facial expression, absence of knee jerks and difficulty in his speech.

(b) In the meantime, R.C., the youngest of the three boys, had been attracting attention in his school. He was described by the headmistress as being "quite a normal boy with average capabilities," but on July 12th his form mistress noticed that he was out of sorts and she was struck with his sudden inability to form his letters. On the following day it was noticed at school that he lay about with his head on

* See Ministry of Health special report No. 11, pp. 63 and 202.

the desks and although usually a merry youngster, he refused to play with other children; when roused and questioned he complained that he could not see. At home it was recorded by the mother that he suffered from diarrhoea and vomiting and had difficulty in speaking clearly. On the 14th the father brought R.C. to the Clinic chiefly on account of the diarrhoea and because he seemed to be ailing like his brother before him. Dr. Willoughby also noticed that there was an apparent ptosis of both eyes but it seems that his mistress had long been familiar with an overdrawn condition of the lids.

(c) S.C., unlike his two brothers, was described as "backward and slow"; a dreamy look was habitual to him and it was even hinted by his school mates that he was "not quite all there." Certainly he was near the bottom in a class where the average age was 2 years less than his own. He attended school as usual between the 4th and 18th of July but on the latter date it was noticed that he was squinting, that his eyelids were drooping, the while he was also drowsy. Through interrogation of the boy's form mistress, however, I learned that as far back as the 9th of July she had occasion to criticise his handwriting; so bad was it on that day that she gave him loose sheets upon which to do his sums rather than that he should spoil the appearance of his note book. The boy was brought to the Clinic on the 18th and eventually joined his brothers in the Isolation Hospital.

4. With Dr. Willoughby, on the 25th July, I saw the three boys lying side by side, sole occupants of a small ward in the Borough Isolation Hospital; and I agreed with Dr. Willoughby that all three patients were suffering from encephalitis lethargica. In each case the brunt of the attack had fallen upon the ocular musculature, while the eldest boy still showed signs also of some paralysis of right face and right tongue with marked but equal dilation of pupils; in all three articulation was indistinct. At my visit no lethargy could be observed in either boy and all three shared an immunity from delirium, tremors, limb paralysis, constipation and incontinence of urine. The temperature charts in all three cases showed that there had been no rise of temperature while under hospital observation. All three boys seemed alive to their surroundings and, in so far as one dare prophesy about encephalitis lethargica, were on the road to recovery.

5. *How did the first and subsequent cases arise?*—Briefly the circumstances are:—

- (a) Good health in the case of each boy prior to July 4th.
- (b) No history of any suspicious cases of illness in either of the two schools before or during the illness of the three boys in question.
- (c) July 4th (an unusually warm day) all three boys attended a school treat.
- (d) July 5th E.C.'s face attracted attention by reason of its strange expression and the boy fails in his handwriting.
- (e) July 9th S.C. is censured for bad handwriting.
- (f) July 12th R.C. noticed to be 'out of sorts' and is suddenly unable to form letters.

That the school treat had some bearing on the causation of these cases seems probable but it is not easy to define the exact significance of this event. If it is assumed that all three boys became infected at some common source during the school gathering then it must be remarked that the incubation period varied considerably in the three attacks; also the sequence of events in the case of the first boy would form an unusually dramatic picture of this disease. The more probable hypothesis is that E.C. was, until the date of the school treat, an unaffected carrier, but owing to his strenuous exertions on a very hot day he fell under the sway of the virus already established in his system. If this was so, the infection of the two brothers who shared his bed and possibly also the disposing effect of the school treat is not difficult to understand; there would be more occasion, too, for varying periods of incubation under these circumstances and the actual periods in this instance (4 and 7 days if E.C. directly infected both his brothers) are such as have been recorded before in outbreaks of encephalitis lethargica.

6. There are several noteworthy points about this small domestic outbreak at Eastbourne.

(a) This is the second instance of multiple infection in the same town.

(b) All the patients were school children; two of these were normal healthy boys of good mental calibre while the third though physically normal was distinctly backward and deficient as a scholar.

(c) Their home was inhabited by too many people (like many others in popular seaside places); but the street was an unusually wide and well-aired one, while the bedroom the boys occupied had three good sized windows.

(d) As in many other instances of familial infection so there was here also an unusual event—the school treat—which seems to have been in some way connected with the series of cases. (In the case of the school outbreak at Radway a school treat also figured).

(e) The clinical features on this occasion are very interesting. Lethargy was not prominent as in the case of the children at Radway but in all three boys there were subtle changes in the disposition and reaction to school life, together with subjective and objective signs of third nerve involvement. The mother was more concerned with the diarrhoea and vomiting from which two of the boys suffered—and in passing it may be noted that these two symptoms are not common—and was disinclined to think that the children were otherwise unfit for school. The teachers, however, were quick to mark the more significant but subtler signs and particularly in the matter of handwriting.

It may be recalled in the small outbreak at Radway School that the altered handwriting was a subject of comment and specimens of such writing were attached to the report on Radway School. On the present occasion the notice of the teachers was first attracted in each instance by the pupils' altered caligraphy: almost literally they observed the 'writing on the wall.' This phenomenon, so far as I know, has not been often described in the literature; instances were recorded in the Ministry's Report No. 11, however, and now the Radway and Eastbourne series of cases have provided others. There is, I think, something more than mere malaise and lack of energy to account for the altered appearance of the pupils' copy book. In some cases the writing becomes larger, and in others smaller, than usual; here the accommodation may be at fault. In other children the writing is tremulous and the letters disconnected—due possibly to invisible muscular tremors of the hands; while in one of the specimens attached (where the same ink and nib were used) to this report there is apparently an alteration in the pressure of pen upon paper. Mental obfuscation appears in those efforts where the spelling is abnormally at fault.†

But wherever the actual breakdown in the mechanism of writing occurs the fact that in the several instances, it has occurred as a very early symptom is one of some interest and importance, especially to those concerned with school children.

(f) Finally, it is a pleasure to record again the alertness shown by two agencies in the discovery of disease in its early stages. The close observations and records of the teachers in the two schools concerned were an invaluable help in the investigations. Then the place which the Child Welfare Clinic has won for itself in the regard of the people at Eastbourne resulted in all three cases being brought up for inspection without any undue waste of time. At the Clinic the true nature of the invasion was recognised by Dr. Willoughby and Dr. Coghill who, a few years ago, drew our attention to one of the very earliest known instances of multiple infection.

Here, perhaps, I may be allowed to say that, in the case of encephalitis lethargica, opportunities for important research work are given to School Medical Officers and no less to school teachers. The incidence of this disease lies heavy upon children of school-going age, and the school

† It is not convenient to reproduce here the specimens of handwriting which have been collected in this instance. To make extracts suitable for the space available would be to shear the originals of much of their interest. If the collection of these strange scripts increases, however, a special note may be issued later.

class-room affords a fairer field for accurate observation than does the larger world outside. It is important therefore, to know how this strange affection may be manifested in school children, and how its presence in a school may be early suspected by those who are in closest touch with the children.

A pupil showing slackness and inattention on a hot summer's afternoon is not necessarily incubating encephalitis lethargica; far from it. But, when a child who is usually attentive and intelligent—and children such as these are most often the victims—suddenly, or gradually, becomes apathetic and finds difficulties with his lessons, then the teacher will do well to be on her guard. This vigilance will find further warrant if reports reach her that out of school, also, the child mopes and takes no part in games during 'break.' Then suspicion will be aroused immediately should the child complain of any sort of difficulty about seeing; there are many ways in which the sight may be affected, but most commonly the patient complains that objects appear blurred or he "sees double." At this point certainly, if not before, the pupil's handwriting should be closely scrutinised in view of what has been said above. Equally significant, though not always coincident, would be the appearance of a squint, drooping eyelids, or restless movements of the eyeballs. The characteristic lethargy, or bouts of sleeping, will of course attract attention, but somnolence may occur late or, in typical cases be absent altogether.

It is with the first beginnings of the attack, however, that the teacher can most usefully concern herself. The early detection of some subtle change in a pupil's disposition, appearance, or handwriting may well save the child in question from much ill-merited chiding, if not from definite ill-treatment. The School Medical Authorities if informed at once of any suspicious case will have unusual opportunities for studying the epidemiology of the disease, and will be prepared for any preventive measures that may be necessary.

Finally, there is perhaps no affection of school life in which the alliance of the teaching staff is altogether more needed than in the case of encephalitis lethargica. In a disease which is so often characterised by insidious mental changes and by physical reactions which may vary from day to day, the school teacher has unrivalled opportunities for close observations which may add very considerably to the sum of medical knowledge.

Postscript.

After the account above was written a fourth case occurred in this same family and a sister, aged 10 years, joined her brothers in the hospital on July 30th. She was last in contact with her affected brothers on the 18th July and became ill herself on the 30th, so that the incubation period in her case was 12 days.

This child was but slightly affected and the symptoms were indistinct vision, diplopia in the right eye and unequal pupils; the knee jerks were feeble and there was a very slight Kernig on the right side. The handwriting also showed changes. By August 13th the child was reported to be well, and quite possibly her case might have been missed had there been no others in the house.

104. These deeply interesting and valuable reports illustrate many points of importance to School Medical Officers, and, indeed, to teachers and others concerned in education. It was by intensive medical work in schools that the discovery was made by Colonel James and Dr. Parsons that the malaria parasite might be found in English school children and that non-imported ague was still lingering in a few districts in this country haunted by the anopheles mosquito. It is by similar intensive study and patient research work that our school medical problems will be advanced and perhaps solved.

V.

MEDICAL TREATMENT OF PUBLIC ELEMENTARY SCHOOL CHILDREN.

105. From August 1st, 1919, the Local Education Authorities have been required by the Education Act, 1918 (Section 2 (1) (b)), to make provision, or see that it is available, for the medical treatment of school children. It will be seen from the following historical table that prior to that date most of the Authorities in England and Wales had, of their own initiative, made such provision.

Number of Authorities which made arrangements for Medical Treatment.

Year.	Made some arrangement for Medical Treatment.	Provided School Clinics.	Contributed to Hospitals.	Made provision for supplying Spectacles.
1908	55	7	8	21
1912	167	97	37	101
1913	241	139	53	125
1914	266	179	75	165
1918	287	252	110	235
1919	298	272	127	264
1920	309	288	168	282
1921	310	291	183	289
1922	312	297	186	294

106. The arrangements made available by the Authorities include one or more of the following :—

(1) the utilization of the services of the private medical practitioner (general or special) ;

(2) the employment of School Nurses under the direction of the school medical officer ;

(3) the establishment of school clinics (medical, surgical, dental and remedial) ;

(4) the use of hospitals in return for a contribution, for the treatment of school children ;

(5) the provision of special facilities for the supply of spectacles gratuitously or at a reduced rate ;

(6) the use of cleansing stations in the case of unclean or verminous children.

The type of the provision made by Authorities is shown in the following table :—

Provision made.*	Counties.	County Boroughs.	Boroughs.	Urban Districts.	Total in 1922.	Number for 1921.	Number not making provision in 1922.
(1) Treatment of Minor Ailments.	57	81	123	42	303	298	14
(2) Treatment of Dental Defects.	47	70	95	32	244	240	73
(3) Treatment of Defective Vision.	58	80	115	40	293	290	24
(4) Made provision for supplying Spectacles	57	80	114	43	294	289	23
(5) Treatment of enlarged tonsils and adenoids.	46	59	90	33	228	221	89
(6) Treatment of Ringworm (X-Rays).	25	50	50	20	145	141	172

The above figures illustrate the extent to which Local Education Authorities have so far developed their schemes for the treatment of defective physical conditions among school children. That the field is as yet inadequately covered is apparent from a superficial glance at the figures in the last column of the table. It has unfortunately to be admitted that the demand for economy precludes development at the present time except in the backward areas where the need for the provision of facilities is clamant.

School Clinics.

107. The most popular type of arrangement provided by Local Education Authorities for the medical treatment of children is the School Clinic. The first and foremost reason for this is that the Clinic is an institution, the organisation and administration of which is under the direct control of the Local Education Authority. Thus the utmost use can be made economically of the facilities provided in the interests of the children. In previous reports statistics have been included showing the number of children in attendance at these Centres, and no general summarization of the attendances made during 1922 is necessary.

108. The confidence of the parents and the children in these institutions has been secured throughout the country, and the need for extended accommodation in view of the large number of children in attendance is reported by many school medical officers. The Clinics are extremely popular and on the whole efficient. The following table summarizes

the provision made at the 1,029 School Clinics at work during the year ending 31st March, 1923 :—

	Total number of School Clinics.	Number of Clinics providing for Treatment of Minor Ailments.	Number of Clinics providing for Dental Treatment.	Number of Clinics providing for Operative Treatment of enlarged Tonsils & Adenoids.	Number of Clinics providing for the Treatment of Ringworm by X-Rays.
Counties	629*	432	385*	59	12
Co. Boroughs ...	182	157	102	19	25
Boroughs	150	135	95	24	8
Urban Districts ...	68	58	34	9	4
Total	1,029	782	616	111	49

* This is an approximate figure owing to the temporary nature of some of the dental clinics in rural areas.

109. School Clinics were provided in 1922 by 297 Local Education Authorities, and for the first time by the Authorities for *Congleton, Deal, Denbighshire, Llanelly, Pontefract* and *Worcester*. Additional clinics were established during the year in 27 areas. New dental departments were opened up in *Durham, Essex, Northumberland, Glamorgan, Barrow-in-Furness, Birmingham, Stoke-on-Trent, Chepping Wycombe* and *Wednesbury*, and the *Isle of Ely* Authority provided a travelling dental car. Additional facilities for the treatment of enlarged tonsils and adenoids were instituted at *Penge* and in *Northumberland* and *Monmouth*.

In *London* there are 57 School Clinics (called Medical Treatment Centres) and 14 hospitals with which arrangements have been made for the medical treatment of school children. The number of children for whom such treatment is provided is 216,368. Several of these clinics are designed to deal with upwards of 6,000 children per annum.

Treatment at Hospitals.

110. Arrangements by 186 Local Education Authorities were made during the year for the treatment at hospitals of school children found at the medical inspections to be defective. The number of hospitals undertaking this work in 1922 in return for a subsidy by the Authority was 381. The following conditions were dealt with: (a) eye defects, (b) enlarged tonsils and adenoids, (c) ringworm, by X-rays, (d) minor ailments, and (e) miscellaneous defects, 317 hospitals undertaking one form of treatment, 46 two forms, 16 three forms, and 2 four forms.

In addition, a number of school children were also treated at hospitals without the intervention of the Local Education Authority.

Minor Ailments.

111. Arrangements were made during the year by 303 Local Education Authorities for the treatment of minor ailments of school children. This class of defect includes such conditions as blepharitis, conjunctivitis, ophthalmia and other external eye diseases, scabies, impetigo, eczema and other skin diseases, uncomplicated otorrhœa, septic sores or cuts, burns, whitlows, boils, chilblains, etc. Treatment is usually given at the school, at the clinic or in the home, by a school nurse acting under the direction of the School Medical Officer. In London 74,467 children received minor treatment during 1922. The number of attendances at the treatment centres totalled to 1,292,929. In addition, 3,944 cases of scabies were treated at the cleansing stations.

112. At *Sheffield* the Minor Ailments Clinics are held daily throughout the year and are continued without a break through all the school holidays. There were 174,000 attendances during the year. The following table, giving particulars of the minor ailments treated, may be quoted as an illustration of the relative demands made upon a minor treatment clinic :—

Condition.	Boys.	Girls.
Eye :—		
Blepharitis	499	502
Conjunctivitis	1,093	1,047
Keratitis	8	5
Corneal Opacities	14	11
Corneal Ulcers	52	49
Other Conditions	236	298
Ear :—		
Discharging Ears	678	536
Other Diseases	141	135
Minor Surgical Dressings	495	370
No Appreciable Defect	25	20
Total Cases	3,241	2,973 = 6,214
Total Examinations	11,173	10,466 = 21,639
Ringworm, Head	576	409
„ Body	348	327
Scabies	213	230
Impetigo	1,257	889
Sore Head	376	694
Other Skin Diseases	795	619
No Lesion	19	7
Total Cases	3,584	3,175 = 6,759
Total Examinations	15,031	13,457 = 28,488

113. A marked reduction in the incidence of these contagious diseases is noticeable, and in all probability it indicates to some extent a real decline in the incidence of these conditions among the school children owing to the more complete supervision that now exists. A return

by Dr. Joseph, of *Warrington*, shows how cases attending a School Clinic for examination by the Medical Officers are dealt with:—

	Boys.	Girls.	Total.
Referred to private practitioners for treatment	42	59	101
„ to hospital for treatment	97	89	186
„ to School Clinic	206	227	433
„ for treatment at home	29	633	662
Found fit for School on first attendance ...	81	89	170
			<hr/> 1,552 <hr/>

At *Liverpool* the attendances for the past three years were 116,130, 176,700 and 199,263 respectively. Dr. Hope states that a recent enquiry makes it appear that approximately two-thirds of the children are cured within a fortnight and 90 per cent. within a month. The cases requiring more than a fortnight's treatment are mainly cases of discharging ears, corneal ulcers and blepharitis.

114. Finally, I may quote Dr. Hughes of *Stoke-on-Trent*. He says:—

“A verminous head, sallow complexion, suppurating glands, and a general listless, tired appearance constitute a syndrome, which, fortunately is met with less frequently now than when I commenced medical inspection in 1908. The general attitude of parents towards this matter has also undergone a complete change. Formerly, any attempt to impress upon them the danger of allowing a child to remain in such a state was met with an indulgent smile—now they become exceedingly angry—a sure sign that they realise that they are in the wrong.

“Many of these minor ailments are trivial of themselves, and if dealt with promptly, not of much consequence, but my fourteen years' experience of medical inspection has revealed two striking facts:—

(1) The frequency with which several minor ailments exist together.

(2) The length of time parents allow their children to remain in this condition. This often extends into years.

“In consequence of this parental indifference, the constitution of the child is gradually undermined and the foundations laid for much subsequent physical deterioration and industrial incapacity. It is exceedingly difficult, for example, to induce parents to regard the skin, not as a mere covering, but as an excretory organ, of equal importance to the lungs or the kidneys, or a ‘breaking-out’ as of any consequence beyond rendering the child unsightly.

“It is in this connection that the School Clinic is such a valuable agency of public health—the prompt, efficient treatment of these minor ailments being of as much advantage to the community as it is to the individual.”

Ringworm.

115. The loss of school attendance, and consequent grant, occasioned by the incidence of ringworm, though much reduced of late years owing to the introduction of treatment by means of X-rays, is still substantial. The number of Authorities which treated Ringworm by means of X-rays during 1922 was 145. The decline in the number of ringworm cases recorded in *London* in 1921 was continued during 1922, 2,766 fresh cases having been reported for the twelve months, as compared with 3,473 in 1921 and 3,983 in 1920. At the end of 1922, 818 children were

known to be suffering from ringworm, as compared with 999 at the close of 1921. The number of children cured by X-ray treatment at the Council's treatment centres rose to 65 per cent., as compared with 60 per cent. in the previous year.

116. Further attempts were made during the year to treat the defect by means of drugs. Dr. Robertson (*Blackburn*) states that at the School Clinics in Blackburn he continued the treatment he began in 1920, and secured rapid results with the following method: The hair is cut short, permitting a good examination of the whole surface, the affected parts are shaved; the areas are then washed with ether soap, dried, and the lotion—Calomel 5 grains, Tinct Iodi B. P. 1 drachm—carefully applied. He reports that cure is generally effected within 14 days, and the child is ready to return to school during the third week. During 1921, 61 cases of ringworm of the hairy scalp were thus treated at the clinics. The average number of days required to cure the ringworm was 18. The shortest period was 6 days.

117. The consensus of opinion among School Medical Officers and others, however, is that uniformly rapid and complete cure is secured more with treatment by X-rays than by any other method.*

Middle Ear Disease.

118. "Discharging ears" constitute one of the most serious of the so-called "minor ailments," and I am glad to report a fuller recognition on the part of many Education Authorities of the gravity of this disease, and more organised and scientific effort to cure it. Though in its mild forms it remains "minor," its very great importance demands the fullest consideration and skilled treatment.

119. Inflammation of the middle ear (the cavity of the tympanum) with suppuration is a menace both to the hearing and to the life of the child. It may follow an attack of scarlet fever, measles, diphtheria, influenza or whooping cough by the extension of infection or sepsis from the naso-pharynx or by inflammation of the temporal bone itself. Common colds if neglected may also lead to it, but the majority of cases in children are produced by septic infection from adenoids, diseased tonsils or decayed teeth. Mr. Waugh, the Senior Surgeon at Great Ormond Street, considers that probably 95 per cent. of all cases of discharging ears in children are due to enlarged and neglected tonsils and adenoids, or to carious teeth. The Eustachian tube carries the infection to the tympanic cavity, where the inflamed mucous membrane produces pus which ultimately perforates the membrane and discharges through the outside ear. Prompt and efficient treatment is extremely important, for otherwise the condition may become chronic leading to deafness and ill-health, or the infection may spread to the mastoid antrum or cells, or even the membranes (meningitis) and substance of the brain (cerebellar abscess). The decline in the frequency of these often fatal diseases is due mainly to the attention which has been devoted by the School Medical Service in the last fifteen years to middle ear disease, oral sepsis and the treatment of adenoids.

* See also "*The Treatment of Ringworm*," Dr. Arthur Whitfield (Physician to Skin Department, King's College Hospital), *Lancet*, June 2nd, 1923, p. 1124.

But much remains to be done, for, first, middle ear disease should be *prevented*, for it is a preventable disease, arising in children with unhealthy nose and throat conditions; secondly, many thousands of cases, in an early stage, are being wholly neglected by parents and schools; and thirdly, many others are not being treated in the best way. The penalty is (a) deafness, (b) mixed infection and chronic middle ear disease, (c) mastoid abscess, or (d) meningitis or cerebellar abscess.

120. The forms of treatment which are available are, broadly speaking, three :

- (i) the application of antiseptic or drying powders ;
- (ii) the coagulation of albumen by zinc ionisation ; and
- (iii) surgical operation such as incision of the tympanic membrane or opening the mastoid.

The principle of the first and second methods is to destroy the infecting bacteria which have invaded the ear, or remove the moisture which favours their multiplication; the principle of the third is the radical removal of the abscess. In a word, treatment of middle ear disease is "expectant" until it is evident that safety demands a radical operation. But neither method can be wisely used indiscriminately. It is necessary in each case before deciding what treatment to adopt to consider (a) the original cause of the acute inflammation of the middle ear, and (b) the conditions which have produced either the chronic state or the dangerous spread of the infection. Merely to treat every case of discharging ears in a child by syringing with antiseptic lotions is to have many failures, waste much time, and sometimes court disaster. What is urgently needed in every school clinic is the intensive study of each case of middle ear disease, and its proper and effective treatment. This treatment must be *general* as well as local, for the disease is an infection and the health of the whole body must be considered.

121. The treatment undertaken by Local Education Authorities thus falls into three groups. At most of the clinics for dealing with minor ailments routine treatment of middle ear disease is carried out by syringing with suitable antiseptic solutions or the application of boracic powder. This method is undoubtedly effective in many cases, though it is protracted and palliative. In *Liverpool, Birmingham, Sheffield, Leicester, Leigh* and elsewhere an aural clinic has been established under the care of a surgical specialist, and cases which are not cured by this means are submitted to operation at the clinic or neighbouring hospital.

122. Secondly, zinc ionisation, as recommended by Leduc, of Nantes, has been introduced by Dr. A. R. Friel, and is proving itself extremely valuable. By "ionisation" is meant the penetration of the tissues of the body, by means of an electric current, of an ion, a constituent of a salt in a nascent condition: Zinc ions coagulate the albumen of the tissue they penetrate and of the bodies of the infecting bacteria, hence they dry the tissue and kill the organism. The exudation is sterilized. The function of the electric current is to carry the ions deeply into the tissue or substance ionised. The salt used for these septic cases is zinc sulphate in suitable solution of non-irritating strength. The method is clearly contra-indicated in cases where caries of the bone, mastoiditis, inflamed adenoids, septic tonsils, multiple granulations or polypi are present. Dr. Friel considers that 50 per cent. of the cases of otorrhœa are readily

curable by ionisation, and recurrence is uncommon. One ionisation of fifteen or twenty minutes is usually sufficient. In his official report for 1922 Dr. Forbes, of *Brighton*, reports 72 per cent. of cures, and in the London schools Dr. Wells records 81 per cent. of cures, two-thirds of them in a single treatment. Dr. Friel's own success in the London schools shows the remarkable result of 89 per cent. of cures in cases in which the sepsis was confined to the tympanic cavity. Ionisation has also been introduced by Dr. Hughes at *Stoke-on-Trent*, and by Dr. Eustace Hill at the Birtley Clinic, *Durham*.

123. Lastly, owing to neglect of middle ear disease, it is necessary in certain cases, in order to effect a cure or save life, to perform mastoid or other operations. In most areas these are performed at hospitals, but at *Leicester* Dr. Warner has charge of a special Ear, Nose and Throat Clinic, admirably accommodated at Richmond House, in which the aural surgeon, Mr. Keen, F.R.C.S., performed 659 operations (including 590 adenoids or tonsils and 52 mastoids). Tonsil cases are detained for the night and subsequently visited at home. This well-equipped hospital clinic has now, after two years, amply proved its value. Similar excellent schemes have been established at *Brighton* and elsewhere.

Enlarged Tonsils and Adenoids.

124. The particulars given in the following table indicate the extent to which children in the public elementary schools were found with enlarged tonsils and adenoids. As will be readily seen, this represents a serious mass of debilitating disease, which in about 5 per cent. of the cases calls for surgical interference.

	Routine Groups. 1,727,314 children medically inspected.				Special Group. 624,318 children medically inspected.			
	Cases referred for treatment.		Cases requiring to be kept under observation but not referred for treatment.		Cases referred for treatment.		Cases requiring to be kept under observation but not referred for treatment.	
	Number	Per- cent- age.	Number	Per- cent- age.	Number	Per- cent- age.	Number	Per- cent- age.
Enlarged Tonsils...	44,290	2·6	60,884	3·6	12,287	2·0	9,614	1·6
Adenoids ...	12,521	·7	10,229	·6	6,527	1·0	3,671	·6
Enlarged Tonsils and Adenoids.	22,736	1·3	9,861	·6	9,907	1·6	3,123	·5
Totals ...	79,547	4·6	80,974	4·7	28,721	4·6	16,408	2·6

125. In *London*, "unhealthy conditions of the throat and nose are still rife among the school children, but show year by year a diminishing incidence. Among the 199,812 children examined in the age groups, 22,213 were marked with enlarged tonsils or adenoids, or both, or with other unhealthy throat or nasal trouble. This represents 12·8 per cent., compared with 16·5 per cent. in the previous year. 7,290, or 3·6 per cent. of the above children were referred for treatment for tonsils and adenoids. The percentage was 4·8 in 1921, 5·5 in 1920, and 6·1 in 1919, so that in addition to the steady decrease in the total numbers marked, there is also a steady decrease in the serious cases requiring medical treatment. One of the greatest gains resulting from the diminution of unhealthy throat conditions is the corresponding reduction of the number of children suffering from discharging ears."

126. In paragraph 118 of the Report for last year, the conditions of a satisfactory scheme for the operative treatment of enlarged tonsils and adenoids were recommended, and should be followed in all areas.

As an instance of the careful procedure which is being adopted in many areas, the case of *Brighton* may be mentioned. Here, printed instructions as to feeding, etc., before operation, are given to the parent, and also instructions for the care after operation. The treatment is carried out in an isolated building at the entrance to the sanatorium. There are an operating room, two small wards, accommodating four and five beds respectively, a lavatory and a waiting room, and it is important to note that the wards and lavatory intervene between the operating room and the waiting room. The operation is performed by the senior school doctor, the assistant school doctor giving the anæsthetic, which consists of a mixture of two parts ether and one part chloroform. Before the anæsthetic, each child is medically examined as to its fitness. Two nurses are in attendance—one in the operating room and one in the wards. Nine cases are treated at a session; the operations commence at 9.15 a.m. Before leaving, usually about 12 mid-day, the doctors satisfy themselves as to the condition of the patients. The children are kept in bed till 4 p.m., the nurses being in attendance, when they are conveyed home by motor ambulance, the nurses accompanying them to their homes. Any child who does not appear fit to travel is seen by the resident physician at the sanatorium, and, if necessary, is detained overnight in the isolation block. On the day after operation, each case is visited at home by a school nurse, who advises the parent and also notes the condition of the child. The school medical officer mentions that these visits are always welcomed, for, apart from showing that the child is still under observation, the nurse is often able to relieve the anxiety of the parent. Further home visits are made if necessary. The child is brought to the clinic a week after operation, the condition of the throat noted, and the question of its fitness for school or otherwise settled. Children who have been operated upon are also seen a year later at the clinic and improvement noted. Many of the children treated are referred to the school clinic from the various hospitals in the town, by practitioners, and many are presented on the initiative of the parent. Similar arrangements now obtain in a number of the larger educational areas.

At *Sheffield*, large numbers of children who are mouth breathers have been treated. These are presumably suffering from adenoids of a minor degree, accompanied in many cases by slight deafness. Dr. Chetwood reports that "considerable success has followed on a very simple form of treatment which consists essentially of thorough nose blowing, correct nasal breathing, with the addition in many cases of the inflation of the middle ear by Politzer's method."

Stammering.

127. The treatment of stammering and other speech defects is only undertaken by a relatively small number of Local Education Authorities but it is a subject which should receive attention, for in the majority of cases the condition can be cured, whilst, if left untreated, the defect not only interferes with the prospects of the child obtaining employment, but also often leads to much unnecessary misery during the child's school and after-life. Correct speech depends upon a normal condition of the speech centre of the brain, and the harmonious working of the various neuro-muscular mechanisms which produce speech, namely, the respiratory, the laryngeal and the oro-nasal. In stammering there is lack of co-ordination between these mechanisms and consequently imperfect speech. The establishment of organic co-ordination is therefore the object of the treatment.

128. Treatment may be considered under 3 heads—

(1) *Physical and General Welfare of the Child.*—The child should be subjected to a careful medical examination, and any mal-nutrition, fatigue, overpressure or anæmia should be appropriately treated by attendance at an open-air school, by provision of meals, out-door games, etc. Any defect of the teeth should be remedied, and, if necessary, enlarged tonsils and adenoids removed. Defect of vision should be remedied by suitable glasses. Children have been cured of stammering by the removal of a sharp tooth which was ulcerating the cheek and also by correction of errors of refraction.

(2) *General Mental Balance.*—The most important factor in the cure of a case of stammering is the personality of the teacher. Confidence in the teacher is essential, for without the establishment of complete self-reliance in the child, good results are not possible. The interest and co-operation of the parents should also be enlisted. Parents who assume a severe attitude towards the child or who, on the other hand, spoil the child and therefore undermine the necessary effort and perseverance required, will interfere with the processes of cure. The Manchester Local Education Authority give parents a leaflet of advice on the subject.

(3) *Treatment of the Defect itself.*—In certain cases, no doubt, individual tuition gives very satisfactory results, but excellent results have been obtained in many parts of the country by teaching the children in classes. Such classes are of two distinct types:—

(a) Those in which the child attends continuously morning and afternoon, the sessions lasting about $2\frac{1}{2}$ hours in the morning and $1\frac{1}{2}$ hours in the afternoon. The length of the course will vary from one to three terms or more. This arrangement has been in practice in Manchester for the last 15 years, and has more recently been adopted in Barry and Smethwick. During each session the first $\frac{3}{4}$ -hour is devoted to breathing and vocal exercises, the rest of the time being occupied with class work. The system adopted in Manchester is that of the late Monsieur Berquand. In this system the child is instructed not to talk, except when under class instruction, for the first 14 days, either at school or at home. The curriculum consists of appropriate breathing exercises, followed by vocal exercises, which are first sung and then intoned. Recitation and reading are practised, and, finally, the child is able to speak correctly in a monotone. Dr. Bell Ferguson, of Smethwick,

made a special survey of children with alleged speech defects in 1920, and 78 were judged as suitable for a special class. The number in each class is 10, and the course lasts until the child is certified fit to return to the Elementary School.*

(b) During the last three years classes have been established in London which meet for a period of $1\frac{1}{2}$ hours twice a week, the rest of the time being spent by the child at his ordinary school. Classes on two days per week are also arranged in Ipswich, Wallasey and Harwich, and on one day per week in Hornsey, whilst at Plymouth classes are held for one hour daily. The procedure is as follows: Children are reported by the Head Teachers of ordinary schools, are selected by the Assistant School Medical Officers, and when a vacancy occurs, attend the stammering class which is nearest to their home. It has been found satisfactory to begin training school cases at about the age of 9, for if the child is below this age, there is the difficulty in transit, if he lives some distance from the Centre, and also the fact that younger children fail to understand the necessity of perseverance, and do not read sufficiently well to derive full benefit from the course. The procedure followed in the London Schools is as follows:—

(i) *Appropriate breathing exercises.*

(ii) *Rest and Relaxation*, each child during the session lying for a period of about ten minutes flat on its back on the floor, a carpet strip and a pillow being provided.

(iii) *Speech training* is then carried out with specially selected sentences, which are spoken with rhythmic action. Further training is carried out by asking questions for quick answers, e.g., naming the colour of everything in the room, reciting the days of the week, etc.

* Dr. Ferguson gives the following account of the line of treatment followed:—"Each case is individually and separately treated. The child's confidence is gained and he is made to feel that he may stammer out confidences to the trainer, who is never afraid of the defect. Absence of fear of the trainer precedes all other exercises, and ease of body and mind is the aim.

Exercises:

"1. Children are taught to relax, to be at ease physically and mentally.

"2. Breathing exercises: Easy and natural breathing is aimed at, incorrect breathing corrected.

"3. Muscular movements: Rhythmic movements with mirror in hand; head, neck and chest gymnastics; massage of muscles; lateral and vertical tongue movements and relaxation of tongue muscles.

"4. Association exercises: with the object of seeing if the child associates quickly and to attack inhibitions.

"5. Rhythm and monotoning: A simple metronome capable of different speeds is in use. The child is questioned and answers by (1) *rhythmic monotoning*—(a) whispering, (b) speaking, (c) singing, (d) shouting; and (2) the exercises are gradually changed to *control of note*—lifting and lowering the voice, aided by lines on the blackboard.

"6. Practice of sounds follows in which the child is definitely taught to train his lips as the sounds are made. Vowel sounds are particularly useful.

"7. Reading and recitation gradually come next without the use of mirror or metronome."

129. *Results*.—During the last three years 763 children have passed through the classes in London. Of these 366 (48 per cent.) were discharged as cured or greatly improved, 280 left through age limit, removals, etc. (many of these had improved), and 117 were carried on from 1922 to 1923. The methods of instruction sometimes appear to give intermittent results. In *Manchester*, Dr. Brown Ritchie reports as follows :—

“ An investigation was undertaken by Miss Atkinson, one of the inspectors of the Local Education Authority in the years 1921 and 1922, to ascertain the speech conditions of pupils who had attended the earlier classes for stammerers. In all, information was obtained from 100 cases which were chosen quite haphazard. The present speech conditions were grouped under four headings :—

“(a) Very well—those with absolutely perfect speech (45 per cent.).

“(b) Well—those who speak normally to the ordinary listener but who state that under the stress of excitement, or if in poor health, there is an occasional check in the speech of varying degree (33 per cent.).

“(c) Fairly—those who stammer at intervals in their speech but not to such a degree as to unduly interfere with their occupation (17 per cent.).

“(d) Bad—those who stammer in a very pronounced fashion (5 per cent.).

“The first two groups taken together show that 78 per cent. may now be regarded for all practical purposes as normal speakers.”

130. The causes of failure appear to be that some of the children are too young to read, appreciate the necessity of training, and be capable of perseverance; the indifference or ridicule of parents or discouraging home influences; and the imperfect mental balance and the low mentality of the child. Relapses may, of course, occur after a cure has been established, and this is more likely to take place if other persons stammer in the home.

VI.

THE SCHOOL CLINIC AND SCHOOL NURSING.

(i) *Functions of the Clinic.*

131. As the establishment of School Clinics is extending, or some existing Clinics are being reorganised, it may be timely and convenient briefly to mention some of the principles and methods involved in this institution.

132. Wherever the School Medical Service is a living healthy organism it displays, in common with all other such organisms, a tendency to growth—in directions which cannot always be accurately foreseen—growth stimulated by needs which become apparent as interest develops in the physical and mental welfare of the children. The School Clinic, which at its inception was intended primarily, if not exclusively, as a centre for the treatment of certain physical defects, has undergone a metamorphosis, and acquired functions corresponding with the developing activities of the School Medical Service. Accommodation, staffing and equipment adequate for such functions have become necessary, and the model Clinic of the present day has become a more complex, and, at the same time, far more valuable institution than it was fifteen years ago.

133. First, the School Clinic is a *Treatment Centre*. The scope of the Clinic in this capacity is broadly determined by the amount and character of existing facilities for treatment in any given area; the Clinic is required to supplement, not to replace these. Such facilities vary so widely in different districts that there must necessarily be a corresponding variety in the amount of treatment required to be provided by the Local Education Authority, but, generally speaking, the defects or diseases for which provision should be made fall under one of the following headings:—

(a) Minor ailments or injuries, usually requiring daily dressings by a nurse under the direction of a doctor. Skin diseases.

(b) Conditions requiring treatment by a specialist or expert, for which facilities are not available locally at a cost within the means of the parents. Such conditions include defects of nose, throat, eye and ear, and ringworm requiring X-ray or drug treatment.

(c) Dental defects and diseases.

(d) Remedial exercises.

The above list includes all the ordinary forms of defect or disease for which treatment has been generally sanctioned by the Board. Diseases requiring domiciliary treatment are expressly excluded by the Education Act, 1921, but experience is revealing certain other conditions for which it may be desirable for Local Education Authorities to provide some measure of treatment. Any disability which renders a child unable to take full advantage of the education provided for him, and which can be removed or greatly alleviated by suitable treatment, may, if such treatment is not otherwise available, logically be provided by the Local Education Authority, under the Board's sanction, though the advisability of instituting any particular form of treatment must largely depend upon circumstances and financial considerations.

The treatment of *orthopædic defects*, especially of such as are due to paralysis in childhood, has made great strides during the past few years, and there are now several hospitals at which the crippling due to these causes can be to a large extent remedied, by such methods as the transplantation of muscles and the stabilisation of joints. These forms of treatment can only be carried out in hospital by the most skilled surgeons, but cases of this description usually require prolonged after-treatment by splinting, massage, electrical treatment and the use of appliances. This need is being met by the establishment of centres, some of which are school clinics, at which the children can attend from their own homes, and which are visited periodically by the orthopædic surgeon, treatment being carried out under his direction by a nurse or masseuse specially trained for the work. The cost of such treatment, apart from the provision of special appliances, is comparatively small, and the benefit to the crippled children may be incalculable, while by rendering such children fit to attend the ordinary public elementary schools, a definite economy is effected. Where, therefore, arrangements for this kind of work can be properly linked up with a recognised hospital system, the Board is prepared to consider them as coming within the scope of Section 80 of the Education Act, 1921. Any scheme of this nature should include provision for the treatment of less severe cases—*i.e.*, those not requiring in-patient treatment—from start to finish, and for remedial exercises for cases of slight deformity and malposture (*see* p. 100). Then again, the treatment of obstinate cases of otorrhœa by *ionisation* is another comparatively new development of school medical work. This method of treatment has been carried out in London and elsewhere during the past two years on selected cases, with satisfactory results. The cases treated have been those which either resisted the ordinary conservative methods of treatment, or those for which other methods were counter-indicated (*see* p. 66).

134. Secondly, the School Clinic is the *Health Centre* for children of school age. Medical Inspection reveals the existence of a large amount of ill-health, due to constitutional and environmental causes; parents and teachers, whose interest in the health of the children has been stimulated by the school medical work, often become anxious when they notice that a child is "not up to the mark" at school, and are glad of an opportunity to consult the School Medical Officer. But these conditions cannot be investigated in school; time, quiet, adequate lighting, opportunity for detailed inquiry are necessary for such purposes, and can only be obtained by the establishment of a properly equipped centre. Hence the "Inspection Clinic," where the attempt, by wise counsel, to check the beginnings of disease, and to re-establish a normal condition of health constitutes one of the most valuable activities of the School Medical Service.

From the point of view of *school attendance*, the Clinic as an Inspection Centre has become nearly everywhere a practical necessity. The large number of temporary or chronic absentees from school who are under no regular medical supervision have long been a source of trouble to the Attendance Officer, and the opportunity which the Clinic affords of obtaining a medical opinion as to the fitness or otherwise of a child to attend school is in itself sufficient justification for the establishment of such a Clinic. If satisfactory arrangements are made for this purpose a large amount of unnecessary absence from school (and the resulting loss of grant) can usually be avoided, and a distinct economy thereby effected.

135. Thirdly, the Clinic should also act as a centre for the pursuance of *research work*, diagnosis, and detailed investigation. (*See* p. 50.) In addition to the problems concerning the causes of ill-health, the

association of local or constitutional defects with hereditary or environmental conditions, or with other defects, and the results of various remedial measures, more light is required on many school medical problems.

As regards the necessary equipment, every clinic should be provided with accurate apparatus for weighing and measuring; beyond this the apparatus will necessarily depend upon the nature of the investigation undertaken; such items as a stop watch, a hæmatometer for determination of hæmoglobin, etc., may be required, but for many purposes an original and thoughtful worker will be able to devise his own apparatus. For the conduct of examinations into the *mental condition* of children the School Clinic is usually the most suitable centre. The examination and classification of children of subnormal mentality, which is a statutory duty, is not the only activity of an adequately-staffed mental clinic. There is the neuropathic child to be considered, whose mentality may be normal or super-normal, but who betrays psychical abnormalities, accompanied, it may be, by physical symptoms, such as insomnia, stammering or anorexia. It is probable also, that in the future such a clinic may be of value in assisting to determine problems concerning the vocation of normal children who show special aptitude in certain directions.* Further *diagnosis* and exploration are often necessary, particularly in obscure cases or in unravelling the causes and conditions of school epidemics, and such work should find facilities in the School Clinic. Much has recently been done in the examination of "carriers" and "contacts" and in the application of the Schick test in diphtheria.†

136. Fourthly, in a well-organised educational area, the School Clinic may be also the *Administrative Centre* of the School Medical Service. Clerical assistance is usually required at all Clinics where there is a large attendance, to save the time of doctors and nurses; if the clerks are housed in the same building, and if records are stored here, time is saved, and administration is simplified. Correspondence and the work of summarizing and compilation of statistics are facilitated by such an arrangement. It will be deduced from the foregoing paragraphs that the Clinic should serve generally as an administrative *Clearing House*. To the Clinic are sent children who are delicate or diseased, underfed or otherwise neglected, unclean, blind or deaf, physically or mentally defective, for examination by the School Medical Officer, whose duty it is to determine the course to be adopted in each individual case. Those for whom provision is made at the Clinic remain in attendance here; some are referred to the private practitioner, the hospital, the cleansing station or the tuberculosis dispensary for the necessary treatment; others to special schools for blind or deaf, mentally or physically defective children, others again are noted for modifications of curriculum, or are put on the list for the "Provision of meals." But all cases distributed from the Clinic should ultimately return there, that the School Medical Officer and his colleagues may judge of the efficiency of the measures they have taken.

* For particulars of a *Mental Clinic for Nervous and Borderland Cases*, see Proceedings of Royal Society of Medicine (Dr. Helen Boyle), 1922, Vol. XV, No. 10, p. 39.

† See *On the State of the Public Health*, the Annual Report to the Ministry of Health for 1921; also the Ministry's special report on the Schick Test, 1921; and Surg.-Com. Dudley's report on the same test to the Medical Research Council, 1923.

(ii) *Staffing and Equipment.*

137. As regards the *staffing* of the School Clinic, circumstances vary so greatly that it is not possible to do more than suggest the principles which should guide a Local Education Authority in this matter. The School Medical Officer, or one of his assistants, should be responsible for the preliminary examination of all children sent to the Clinic, and for determining the procedure to be adopted in each case; he should decide the necessity and period of exclusion from school, and should undertake the direction of the simpler forms of treatment. All these duties may, of course, be undertaken by general practitioners appointed to the staff of the School Medical Officer. Specialized forms of treatment, such as refraction work, ionization, operative treatment, electrical and X-ray treatment may be carried out either by members of the School Medical Officer's staff who have had special experience, or by whole- or part-time experts specially appointed for the work. Such experts should always be considered in the light of consultants, and their duties should include the determination in each case of the proper line of treatment, and not merely the carrying out of such treatment.

138. It is, generally speaking, false economy to allot to the School Medical Officer duties which can equally well be performed by less highly-qualified individuals. Hence the necessity of making adequate provision for clerical assistance. It is obvious that a doctor who spends a large portion of his working hours in formal correspondence, the making of appointments, summarizing and statistical work, etc., is to that extent acting simply as a highly-paid clerk, and has proportionately less time for his medical duties. The same is true, to a smaller extent, of the nurses appointed for clinic duties; these should devote their time primarily to clinical work, and should only be required to undertake clerical duties in so far as these do not interfere with the more purely professional work.

139. The *dental clinic* requires, in addition to the dental surgeon, the services of a woman assistant, who need not necessarily be a qualified nurse, to help the dentist in the management of the children, sterilizing of instruments, keeping of records, and other duties of similar nature. This assistant should be available for whatever time the dentist devotes to school work, whether at the schools for inspection or at the clinic for treatment.

140. The number of *nurses* required for clinic duties depends upon the scope and extent of the activities. For the treatment of minor ailments one nurse can deal with from 20 to 25 children in a session of three to four hours; where, however, cleansing work is undertaken the number is considerably smaller, as these cases often take a long time. A nurse is usually required for each of the special clinics (inspection clinic, refraction and X-ray work) and for the operative treatment of tonsils and adenoids usually at least two nurses are necessary, one for the operating room and the other for the recovery room (*see below*).

(iii) *School Clinic Buildings.*

141. The buildings most perfectly adapted for these purposes, though varying in size and arrangement according to the needs of the districts

which they serve, have certain features in common. They should be centrally situated, so as to be easily reached from all parts of the area, and, as far as possible, in quiet surroundings; they should be capable of easy cleansing; they should be adequately lighted, ventilated and heated, supplied with hot and cold water and suitable sanitary arrangements; the various rooms should be easy of access—with no long narrow staircases; accommodation, including that for waiting parents and children should be sufficiently and suitably arranged. Finally, the decorative condition should be such as to convey a bright, cheerful, homelike impression.

A short description is here given of some distinctive types of clinic premises :—

(a) In London, the *Highgate Newtown Clinic*, recently erected by private munificence, is probably the most lavishly designed and equipped school clinic in the country. Externally it is a graceful brick building with a highly decorative central doorway, set back from the road behind a small paved courtyard; entrance for patients and staff are at opposite sides of the building. Internally, the floors of waiting room, corridors and stairs are of terrazzo, those of the clinic rooms being of solid rubber. Walls have terrazzo or painted dadoes, and are distempered a light lavender shade above this; all corners are rounded off. The whole building is centrally heated, and abundantly supplied with light and fresh air.

The ground floor is devoted to the treatment of minor ailments, and of ophthalmic, dental and aural cases. The large and bright waiting hall has a low partition, by which children suffering from the ordinary contagious skin diseases are kept separate from cases for the special clinics. This hall is furnished with benches, and a drinking fountain. Adjoining the hall are lavatories with separate accommodation for children and adults, and basins with hot and cold water.

The rooms used for clinic purposes consist of (a) minor ailments surgery, fitted with a shallow bath in addition to the usual equipment; (b) shampoo room, fitted with sprays over a stoneware sink, for the cleansing of heads; (c) refraction room; (d) dark room; (e) aural clinic, for examination of ear cases; (f) ionization room, fitted with five couches and the electrical appliances necessary for this form of treatment of otorrhœa; (g) dental surgery, and (h) rinsing room with a long trough and arrangements for flushing; this room has a separate exit direct to the outside. All the clinic rooms are completely equipped. On this floor there are also rooms intended for the medical officer's, sisters' and secretary's office, and living rooms for the domestic staff. The upper floor is devoted to the operative treatment of cases of tonsils and adenoids. There is a receiving room, a bathroom, operating theatre with adjoining room for sterilizing dressings; ward kitchen, and a ward containing 19 beds and 2 cots. The ward, which is excellently lighted and ventilated, is divided by a low partition into two halves, a small glazed chamber for the nurse on duty being set in the partition. By this means adequate separation of the sexes is obtained without the disadvantage of two separate wards. On this floor there is also a private ward, and living accommodation for the sister-in-charge.

(b) The school clinic at *Erith* is a good example of the adaptation of a dwelling house for clinic purposes. In this district a large villa, "Hainault," with extensive grounds, has been acquired, the ground floor being adapted as a school clinic, the upper floor as a maternity and child welfare centre. The rooms available for clinic purposes include also two rooms in an adjoining building which was formerly the stable,

making a total of six rooms, used respectively for the following purposes: (a) waiting room, large and well furnished, with an adjoining conservatory, in which sanitary accommodation has been installed; (b) room used for inspection clinic purposes and for the treatment of minor ailments, well equipped, and containing lavatory basins with hot water supply; (c) dental and ophthalmic clinic, part of which is partitioned off as a "dark room"; (d) rest and recovery room for children after dental extractions. In the adjoining building are (e) operating room for tonsils and adenoids; and (f) recovery room with six beds.

The foregoing are two examples of unusually complete and finely equipped clinics, and the total cost of these buildings has been very heavy. There are, however, a large number of clinics throughout the country which serve their purpose equally well, and which have been erected or adapted at a comparatively small cost. A few typical examples of such clinics will serve to illustrate economical methods of providing for the welfare of school children.

(c) In *London*, the clinic at *Bagley's Lane, Fulham*, is a good example of the adaptation of two small adjoining villas. Each villa has two rooms and a kitchen on the ground floor, three rooms on the floor above, and an attic on the second floor. The only important structural alteration required has been to open up communication between the two passage halls of the villas, and between the two front rooms on the first floor. The two ground-floor rooms in one villa have been made into a simply furnished waiting room, by removing the folding doors which originally separated them. The corresponding rooms in the other villa are used respectively as a minor ailments surgery and X-ray room; the former has had a sink and geyser fitted up. Upstairs on the landing floor the dental surgery adjoins the bathroom which has a lavatory basin, and is used as a rinsing room. The two front bedrooms are used (a) as ophthalmic room, with dark room partitioned off, and (b) as recovery room after operations; this room is fitted with two wide couches, each capable of accommodating four or five children. The smaller back bedroom is equipped as an operating theatre. The rooms are floored with plain linoleum, and the walls are painted white above, with a very dark dado.

In smaller districts the use of a single villa of six rooms can be made to serve equally well for the treatment of minor ailments, ophthalmic and dental work.

(d) In *Widnes* the central clinic consists of an army hut which has been very well adapted. In the centre is the waiting room, occupying the whole width of the hut. From this a corridor runs right and left along one side of the hut communicating with the five clinic rooms; three on one side being used as inspection clinic, refraction room and minor ailments surgery; two on the other side forming the dental surgery and rinsing room.

(e) In several districts old disused public houses have been successfully adapted as school clinics; the clinics at *Ashton-under-Lyne* and *Hastings* are good examples of such adaptation. In the latter town the Halton clinic was an old and dilapidated public house which was bought for £350, and redecorated and equipped as a school clinic and child welfare centre at a cost of about £1000. The transformation effected by the change was remarkable; the interior, which was particularly dingy and depressing has now a bright and pleasing appearance. On the ground floor there are five rooms, of which only one is used for clinic purposes, as a waiting room, bright and well ventilated. On the upper floor are the dentists' surgery and rinsing room; a large and well equipped room used for general treatment purposes, including inspection clinic work; a dark room, and an office for the clerks. The premises are in every way admirably adapted for their purpose.

The School Nurse.

142. The work of the School Nurse, its scope and limitations, its value to the community and its importance as a vital link between the school medical service and the parent and child has been dealt with from time to time in past reports.* The matter is, however, so important, and on the efficiency of this branch of the school medical service depends so much the efficiency of the whole service, that attention of authorities should periodically be drawn to the matter. The nurse has, as we have seen, duties at the School Clinic, but her sphere is much wider than that.

143. The duties of a School Nurse may be divided into two broad categories :—

(a) Assisting the school medical officer in the carrying out of the work of the school medical service in regard to the care and welfare of the child of school age; and, linked with this;

(b) The co-ordination of this work with the activities of other departments dealing with the Public Health.

(a) Under the first category come the following :—

(i) *Visits to the School.*—Attending at routine medical inspection the nurse prepares the way for and assists the school medical officer in examination of the children. This includes preparation of the classroom or other accommodation set apart for the inspection, seeing that soap and water, etc., are available, and the necessary equipment provided; measuring the height and weight; ascertaining the condition of clothing and footgear, recording the visual acuity and generally preparing the child for examination; and arranging with parents for attendance at the clinic, and giving advice. She also visits the school at times other than for routine medical inspection, for cleanliness surveys (i.e., examining the clothing, footgear, head, and body for uncleanness, scabies, ring-worm and parasitic conditions) and re-visits for the purpose of following up children previously found to be in need of treatment.

(ii) *Work in the Clinic.*—Here the nurses' duties are largely clinical. The work is of a very varied nature and ranges from acting as assistant at operations for tonsils and adenoids to painting iodine on an abrasion. Briefly, the school nurse will, in the clinic, be called upon to assist in, or herself undertake, the varied activities that take place there. Her work will consist chiefly in the treatment of minor ailments, under the school medical officer's supervision. But, in addition, she will assist in the treatment of dental defects, eye defects, enlarged tonsils and adenoids, general inspection clinics, ascertainment of mental deficiency, remedial massage and gymnastics and perhaps the compulsory cleansing of children.

(iii) “*Following-up.*”—This implies co-operation with Care Committees in visiting the homes of children who are in need of treatment for defects found at routine medical inspection or at the

* See Section III, Report for 1909; Section IV, Reports for 1910 and 1911; Section VII (para. 127 *et seq.*), Report for 1912; and Section VI, Report for 1913.

Inspection Clinic; giving advice to parents how best to obtain the necessary treatment; persuading the hesitant and recalcitrant mother to attend to her child's health; inquiring why a child under treatment at the Clinic or hospital and not yet cured has ceased to attend and so forth. Consultations with the School Attendance Officer will frequently be necessary.

(iv) *Day Special Schools* for the blind, deaf, physically and mentally defective may also come within her purview. The nurse may be required to visit these schools from time to time and, under the School Medical Officer, attend to the health and welfare of the children—assist and consult with the Head Teacher, and advise parents on various matters of health.

(v) *Statistical and Record Work*.—While the keeping of the School Medical Service statistics may form no part of the School Nurse's ordinary duty, yet she will nevertheless be required to keep statistical records of her own work, in addition to recording in her diary the daily routine.

It will be seen that the duties of the School Nurse as regards the work which is confined to the School Medical Service are abundant and varied. Moreover, they require a sound knowledge of the illnesses of children and the treatment of the commoner affections. Much of the work, clinical, therapeutic, remedial and preventive, will have to be performed by her at times when personal medical supervision and assistance is not immediately available, and decisions will have to be taken involving much responsibility. At such times the fully trained, competent and experienced nurse is invaluable, and, indeed, forms an essential element in an efficient Service; the untrained or partially trained nurse, with little real knowledge of her craft, ready to tackle any and every disease she meets, is a hindrance, and may be a danger.

(b) It is obvious that if continuous supervision over the health of the child from birth to adolescence is to be effected some degree of co-ordination between the various activities dealing with the child during the several stages of its early life must be established. The more important departments of Public Health with which the School Nurse will come in contact are :—

- (i) The Maternity and Child Welfare Department.
- (ii) The department dealing with Tuberculosis.
- (iii) The Juvenile Employment Committee.
- (iv) Employers and Medical Officers of Local Factories and Workshops.

Each of these departments has, as a rule, its counterpart of the School Nurse, and it will be necessary for the School Nurse, if she wishes to obtain and transmit valuable information concerning the child's health, to consult frequently with these officers. There should be mutual reciprocity and co-operation between them.

144. But there may be advantage in a closer merging than is obtainable by oral or written inter-communication. An increasing number of Local Authorities are employing Nurse Health Visitors for combined duties. As there is a unification of services of the Medical Officer of

Health and the School Medical Officer, so there may be unification of School Nurse and Health Visitor. The advantage lies not only in the increased efficiency in administration, the economy of time and money secured, but also in the lessening of friction between the Health Office and the home. The fewer the visits paid to a home, no matter for what measure of health, the better, and the fewer the visitors the better. The duties of School Nurse, Health Visitor and Tuberculosis Nurse, to take three examples, may often, with advantage therefore, be merged in one officer. The advantage in rural areas is particularly obvious. Here the time and distance factors absorb a large proportion of the day's work, and reduction of these factors leads to an increased number of visits and the covering, by each official, of a wider area. The matter is a controversial one, but it is expedient for all Local Authorities to scrutinize their administration and consider whether in this direction full economy, combined with efficiency, now obtains.

145. Many Local Authorities have adopted a still wider unification of Services, and employ, in conjunction with voluntary organisations, nurses who attend not only to matters of Public Health and School Medical work, but also the care of the sick and the practice of midwifery. This arrangement applies almost exclusively to rural and semi-rural areas, and raises other and larger questions.

VII.

DENTAL INSPECTION AND TREATMENT.

Extent of Dental Defect.

146. Year by year there is fuller appreciation of the far-reaching effect of oral sepsis. Such sepsis may be due to a variety of conditions but principally to tonsillar and dental disease. Caries of the teeth, pyorrhœa, apical sepsis, or ill-fitting dentures have a remarkable influence in producing such septic conditions. The evils of a septic mouth may affect the whole body, dependent in degree upon the virulence of the infecting organisms, the amount of toxic absorption, the resistance of the patient, concurrent diseases, and secondary infections. The category of disease which may follow such dental sepsis is indeed a formidable one, and includes both general and local conditions. Dr. Beddard has attributed 90 per cent. of the cases of rheumatoid arthritis to infection arising from the teeth, and Sir W. Willcox estimates 72 per cent. of fibrositis and arthritis to be due to the same source. Dr. Cotton of Trenton, New Jersey, U.S.A., has shown that the effective treatment of patients suffering from functional mental disease in the State Hospital is dependent upon the removal of septic infection. The average of discharges as cured from 1908 to 1917 was 38 per cent. But when treatment was concentrated on the removal of oral sepsis from 1919 to 1922, the percentage of cures rose to 87 per cent. "All toxic functional mental disease," writes Dr. Cotton, "is due to sepsis, and most of such cases exhibit signs of oral sepsis as the dominant factor." He claims that on this ground, school medical inspection and treatment is the means of stamping out functional mental disease.

147. Broadly speaking, it is obvious that the danger of dental disease begins in childhood, and it is admitted that dental sepsis is widespread among school children. Early in the history of the national organisation of school medical inspection it became clear that the Board of Education and the Local Education Authorities must make provision for dental inspection and treatment. Of the 317 Education Authorities, 244 have now undertaken dental work (leaving 73 educational areas unprovided with any dental scheme). Upwards of 600 of the school clinics have been equipped to provide the necessary facilities; and dentists have been appointed for inspection and treatment. The following table summarizes the work done in 1922 :—

SUMMARY.

Type of Area. (1)	Average attendance 1921-22. (2)	Routine Groups.				Specials.			
		Inspected by Dentist. (3)	Referred for treatment. (4)	Actually treated. (5)	Re-treated. (6)	Inspected by Dentist. (7)	Referred for treatment. (8)	Actually treated. (9)	Re-treated. (10)
<i>England.</i>									
Counties ...	1,559,489	359,630	234,700	125,016	38,497	22,443	18,380	13,332	463
Urban Districts ...	191,993	92,580	61,622	33,581	8,473	6,473	6,087	7,043	701
Boroughs ...	349,611	157,551	92,273	55,205	22,687	7,650	7,652	7,706	884
County Boroughs ...	1,555,894	483,592	320,740	167,137	39,473	45,831	43,220	43,945	2,621
London ...	615,152	253,280	198,037	84,848	16,859	—	—	—	—
Total, England ...	4,272,139	1,346,633	907,372	465,787	125,989	82,397	75,339	72,026	4,669
<i>Wales.</i>									
Counties ...	165,395	27,574	16,602	11,747	967	3,827	3,081	1,915	—
Urban Districts ...	67,440	12,773	10,255	6,523	574	526	662	637	58
Boroughs ...	2,549	2,402	933	578	260	—	—	—	—
County Boroughs ...	81,411	17,016	12,907	11,145	4,441	1,919	1,810	1,799	90
Total, Wales ...	316,795	59,765	40,697	29,993	6,242	6,272	5,553	4,351	148
Total, England and Wales.	4,588,934	1,406,398	948,069	495,780	132,231	88,669	80,892	76,377	4,817

In the case of 9 authorities, statistics in respect of dental treatment were not available. These authorities have therefore been excluded from the return. In certain cases statistics as to inspection and treatment of "Specials" were included under the "Routine" heading.

148. In one or two areas children were inspected and referred for treatment by the school medical officer or assistant school medical officer as well as by the dentist. But accepting these figures as approximately correct, it will be seen that in 1922 the total number of children (routines and specials) inspected by dentists was 1,495,067, or 32·58 per cent. of the children in average attendance; upwards of a million (or 22 per cent. of all the children in attendance) that is, 72 per cent. of the children dentally inspected, were found so defective as to require treatment; and upwards of half a million children (572,157) were treated. This means that about a third of the children inspected received treatment, and 12 per cent. of all the children in attendance received dental treatment during the year. The table also shows that whilst for the country as a whole, 32 per cent. of the children in average attendance came under dental inspection during the year, the percentage inspected in the several areas worked out as follows :—

Percentage of all children attending school dentally inspected, 1922.

English Areas.					Welsh Areas.				
Counties ...	...	...	...	24·5	Counties ...	...	...	...	19·0
County Boroughs	...	...	...	34·0	County Boroughs	...	...	...	23·3
Boroughs	...	...	...	47·3	Boroughs	...	...	...	94·2
Urban Districts	...	...	...	51·6	Urban Districts	...	...	...	19·7
London ...	...	...	...	41·2					

With the exception of the half dozen small boroughs in Wales (for which the figures are so small that the percentage has little value) we have here an indication of the relative scope of dental inspection.

149. Under all the circumstances the return is satisfactory. The number of children undergoing medical inspection each year is about a third of the average attendance, and the dental inspection is shown to be about the same. It would be anticipated that such inspection would reach a higher percentage in urban than in rural districts. In *London*, nearly 200,000 children were inspected by the dentist, and 90,000 received treatment. The record in the metropolis is so remarkable that the returns since 1913 may be quoted. In the following table the figures show at biennial periods the condition in percentages of the teeth of the 12 year old pupils. (1) standing for sound teeth, (2) for slight dental caries, (3) for extensive caries.

	1913.			1915.			1917.			1919.			1921.			1922.		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Boys 12 years old	50·0	40·0	10·0	53·1	39·7	7·2	55·2	38·6	6·2	55·1	39·7	5·2	60·3	35·7	4·0	65·3	31·5	3·2
Girls 12 years old	52·4	39·0	8·6	55·5	37·8	6·7	56·4	38·1	5·5	56·5	39·1	4·4	63·5	33·3	3·2	67·5	29·8	2·7

Here is seen a very great and cumulative improvement over the ten years. Between 1913 and 1919, the improvement amounted roughly to 5 per cent. more children leaving school with sound teeth; in two

years, from 1919 to 1921, another 5 per cent. was added, and in the last year, 1922, still another 5 per cent., making 15 per cent. in all in nine years. The astonishing progress of the last three years is due to the fact that children are now leaving school, who, nine years ago, first came under dental inspection and treatment.

Last year it was regarded as a noteworthy achievement that some 8,000 boys and girls in *London* were leaving school with sound teeth who would not have done so had it not been for the preventive and curative measures introduced in connection with the school medical service. That this number would so soon be raised to 12,000 was scarcely then anticipated, and the result is, therefore, all the more inspiring.

150. In broad terms the present position is this. Where no dental treatment is available the teeth of 70 or 80 per cent. of the school children show definite decay, with a greater or less degree of oral sepsis and its pernicious effects. Where action has been taken, the figures fell to 40 or 50 per cent. Where a vigorous and well organised system of dental inspection and treatment is undertaken (even though it be not complete as regards all ages and groups of children) oral sepsis is steadily reduced or abolished, and the children leave school with sound teeth and correspondingly better health. The return for *London* in 1922 for the 12 year old children shows 66 per cent. of children with sound teeth, 31 per cent. with slight caries, and only 3 per cent. with extensive caries—a very remarkable and encouraging result. The school medical reports from all parts of the country tell the same story—widespread dental decay and consequent ill-health—but, in varying degree, direct and prompt benefit follows inspection and treatment.

151. Conditions can never, however, be satisfactory until in all educational areas there is a reasonably comprehensive dental scheme, properly staffed. The requirements of such a scheme have been set out year by year in my reports (*see* Report for 1921, page 65, paragraph 130). It is desirable that all Authorities should follow closely this scheme and not be led by inexperienced advice to adopt methods which have proved to be ineffective or uneconomical. The problems which call for immediate attention are :—

- (a) the prevention of the high incidence of dental disease, and
- (b) the means by which limited dental services can be utilised to the best advantage.

Preventive Measures.

152. It may be anticipated that the work organised by the Dental Committee of the Medical Research Council and subsidised by the Dental Board of the United Kingdom (to which reference was made in my last report) will sooner or later throw further light upon the efficient means of prevention.* In the meantime, however, much can be done if

* Much valuable investigation work is being done by many workers, e.g., Professor and Mrs. Mellanby, of *Sheffield*, on the ætiology of caries and the relation of caries to the structure of the teeth; the researches at the Bland Sutton Institute of Pathology, Middlesex Hospital, on the causes of caries; and the work of the Medical Research Council Committee for the investigation of the causes of dental disease (Special Report Series, No. 70, J. H. Mummery, 1922).

Authorities and their Dental Officers will follow the simple rules for prevention which have been described in these reports for many years. Briefly, the premature decay of teeth in children can be prevented by the following steps :—

(1) The avoidance of septic conditions of the mouth which arise from mouth breathing, enlarged tonsils and adenoids, stomatitis, insufficient mastication, and the presence of constitutional disease which predisposes to the bad formation of teeth.

(2) The use of detergent foods and the avoidance of harmful methods of feeding.

(3) The practice of cleanliness of the mouth by the proper use of the tooth-brush or otherwise.

(4) The early detection and prompt conservative treatment of the beginnings of decay.

(5) Periodical re-examination of the teeth.

153. It is these doctrines which require to be strenuously inculcated and practised in childhood and adolescence. The object may be achieved in various ways. (a) A well-organised dental clinic is one of the best means of prevention and possesses also great educational value. (b) The services of dental officers in giving instruction to parents and children should be placed upon a systematic basis by the Education Authority. (c) In areas which are incompletely staffed, lectures on prevention should be given by approved lecturers, and where practicable illustrated by cinema films, lantern slides, charts or models. It must be remembered that the success and efficiency of a school dental scheme, and still more the future development of a national system of dental treatment, depends on an enlightened state of public opinion regarding dental disease and its grave attendant evils.

The Effective Utilisation of Dental Services.

154. The utilisation of the available services to the best advantage involves a number of considerations upon which it will be convenient for me to add a few notes.

(a) *Reduction of Administrative Work.*—A certain measure of administrative work cannot be eliminated from the duties of dental officers in single-staffed areas or of the chief dental officer in areas more fully provided; but it should be remembered that professional services are more limited and more expensive than administrative and clerical services. There should be close co-operation between the units of the administrative machinery and the dental officers. The preparation of records and reports, the maintenance of equipment and material, the issue of consent forms to parents, and other similar work should be carried out on behalf of the dental officers by lay officials and should only require the dental officer's supervision or assistance in matters of strictly technical or professional character.

(b) *Assistance in Professional Work.*—During the war and before the Dentists Act of 1921 was passed there was inevitably a shortage of school dentists, and the Board of Education approved of the employment of *dental dressers* or other unqualified persons who were able to assist the school dentist in his work. Such assistance was approved by the Departmental Committee appointed by the Lord President of the Privy Council in 1917. The Committee were of opinion that suitably trained and competent dental dressers or nurses acting under the effective supervision of a dentist, might be usefully and safely employed in certain parts of the dental work involved, and they recommended that the Board of Education should approve of the employment of such dental dressers, the nature of the work they should perform, and the arrangements for their supervision by a registered dentist. Hitherto the kind of control here recommended has been exercised by the Board of Education, but under the Dentists Act, 1921, approval of regulations governing the dental work of such unregistered persons is required by the Minister of Health, the Board of Education and the Dental Board of the United Kingdom. Regulations have been issued under Section I (3) (c) of the Dentists Act for the performance of minor dental work in the School Medical Service, and these regulations are now in operation. It is obvious that the duties of such dental dressers should be carefully prescribed, for if they undertake work for which they are not professionally qualified, the results could not be otherwise than medically injurious to the patient; moreover, it is illegal for unqualified and unregistered persons to undertake strictly professional duties. Medically and legally therefore it is essential that dental dressers should not undertake work for which they are not qualified. There can be no doubt, however, that the time of dental officers can be saved, their effectiveness increased and dental work extended by the wise and proper employment of dental dressers. The amount of special training required is not great, and can be obtained either from a dental officer or by short courses in dental schools.

(c) *Scope and Character of Treatment.*—Some diversity exists in the methods of treatment adopted especially in incompletely staffed areas, and it is important that Authorities should design their dental work on the basis of the Board's scheme. School dentists should concentrate (apart from emergency treatment) on children between six and eight years of age. It is well to confine the work on this age group to one or more such schools as can receive thorough treatment, which may be extended in subsequent years to (a) re-inspection and treatment of those already seen; (b) other children in the same age group not yet inspected; (c) the commencement of treatment at five years of age; (d) the extension of the scheme to other schools and districts within the area. It should be remembered that the prime object of inspection is to discover caries in its early stages, charting the conditions found, and referring the child for treatment. If a considerable period of time elapses between inspection and treatment fresh caries will probably have developed and some of the value of conservative treatment will have been lost. Charting at the first inspection should undoubtedly be the rule, but it is important that treatment should follow inspection as soon as possible. Authorities would be well advised to consider the desirability of uniformity in charting, and the record chart recently approved by the British Dental Association, which seems to meet all necessary points, might well be generally adopted.

155. Closely related to the scope and character of treatment there are one or two questions which have been raised by school dentists which have been referred to Dr. Norman Bennett, Consulting Dental Surgeon to St. George's Hospital, who has been good enough to furnish the following notes:—

(a) *Abnormalities in Position of the Teeth.*—Hitherto the treatment of what are commonly known as irregularities has only been undertaken in exceptional cases, but there are many reasons why it should, within limits, become part of the general treatment of the child's mouth. The matter is not merely of æsthetic importance: irregularities predispose to caries; different forms of mal-occlusion interfere with proper mastication and impair clearness of speech; contracted arches are associated with mouth-breathing and gingivitis. Probably the more complex cases of abnormal development of the jaws and abnormal occlusion must remain outside the range of what can be undertaken at a clinic. On the other hand, simple cases of incisor teeth displaced by retarded deciduous teeth can often be corrected by simple appliances; cases of "crowding" with a normal molar occlusion can often be remedied by judicious extraction; and even abnormalities of occlusion and abnormalities in position of the teeth associated with developmental defects of the jaws themselves do not always involve complicated apparatus or great difficulties in treatment. Training in orthodontics is now general in the dental schools, and work at a dental clinic should afford scope for the exploitation of this training to the advantage of both children and dental officers. If skilful practitioners are to be induced to adopt school clinic work as a career and not merely as a temporary means towards other ends, they must be encouraged to practise their profession on as wide a basis as is consistent with the needs of the children. Orthodontics comes within that definition.

However, in many cases it is in some respects more difficult to make a diagnosis of the nature and cause of the abnormalities and to prescribe treatment than to carry it out, and length of experience and special application are important factors in enabling a practitioner to form a correct judgment.

The dental officer of a clinic may feel the need for co-operation with others. The hospitals with dental schools provide a possible means of solving this difficulty. Where the clinics are in the same town arrangements might be made by which certain children could be sent to the hospital for diagnosis and opinion. Even in the case of more distant clinics, opinions might be given based on casts of the mouth sent for examination. Simple appliances, especially those of a "fixed" type could be devised and made by dental officers themselves with the necessary equipment which need not be expensive or elaborate; in other cases the appliance might be made and fitted in the first instance at a hospital, and the treatment continued by a dental officer.

(b) *Anæsthetics.*—The extraction of permanent teeth for children without an anæsthetic should be regarded as obsolete. As regards deciduous teeth an anæsthetic other than a local application of one kind or another is often unnecessary, but when the pain likely to be caused is at all comparable with what occurs with a permanent tooth an anæsthetic should be used. The choice between a general and a local anæsthetic rests with the dental officer. Much diversity in this respect exists in different clinics, depending upon the particular training and experience and individual preference of the dental officer. No rule need be laid down. If, however, a general anæsthetic is employed, the routine anæsthetic should be nitrous oxide. Chloroform should not be used and ether is undesirable. Ethyl Chloride is used in some clinics, but it is a dangerous drug, and if used at all, should only be given by a skilful and experienced anæsthetist on whom rests the sole responsibility. Even in the case of nitrous oxide the anæsthetic should not be administered by the operator.

(c) *Deciduous Teeth*.—Different officers appear to have different ideas of what should be the main objects of treatment. This variation is chiefly noticeable in connection with deciduous teeth. These receive more attention in some clinics than in others, but there seems to be no established rule or custom to determine whether, when carious, they should be filled or extracted. Certain principles may be laid down. The first object of treatment is to create or promote a clean mouth. The second is to preserve permanent teeth as far as possible, especially the first permanent molars in the 6-8 age-group. The third is to deal with the deciduous dentition in such a way as to enable the child to masticate properly until the time when the permanent teeth are in position and functional. Teeth which cannot be rendered healthy and functional should be removed, and treatment may justifiably be more drastic with the deciduous teeth than with the permanent. The treatment of exposed pulps may occasionally be undertaken with the permanent teeth, but very seldom with the deciduous. Caries in the deciduous teeth may be treated by filling or by the use of nitrate of silver. The preservation of the second molars by these means is more important than the other deciduous teeth on account of the length of time during which they should function, and the ill-effect of their premature extraction on the arrangement of the permanent teeth in their arches.

VIII.

ORTHOPÆDICS AND THE CHILD.

156. During the war, great progress was made in the science and art of orthopædics, and much fresh experience gained in this way is now available for the benefit of the cripple child. This has led to a growing interest in the problem and the best methods of solving it. I dealt with it fully in 1919 (*see* Report for that year, pp. 100-125), but many developments have since taken place.

157. The type of cases that are dealt with in an orthopædic scheme include the following :—

- (a) Tuberculosis of bones and joints.
- (b) Paralysis.
- (c) Congenital or acquired deformities (including rickets, talipes, scoliosis, etc.).

158. The general principles employed in treatment are broadly as follows :—(1) conservative treatment with immobilisation for non-pulmonary tuberculosis, the methods of obtaining immobilisation differing with the different schools, (2) open-air and sunshine, a favourable environment and a generous dietary, (3) education appropriately modified. But for the pressing need for economy there is no doubt that the provision of orthopædic treatment for the child by the local authority would have increased more rapidly than has been the case, but even under present conditions, schemes for treatment and after-care are gradually being developed, largely by means of voluntary funds with some help from government grants.

Causation of Crippling.

159. The returns for 1922 from the areas of the 317 Local Education Authorities in England and Wales show that there were approximately 35,477 cripple children of school age representing from $\frac{1}{2}$ to 1 per cent. of the entire school population. Of the 35,477 cripples there were 11,717 in whom the crippling was due to tuberculosis, the remainder (23,760) being due to non-tuberculous conditions. The following evidence may be quoted :—

Dr. H. P. Newsholme* (North Riding of Yorkshire), reporting on a recent special enquiry on the prevalence of deformities in school children due to rickets says that :—

Out of 262 known cripples under 16 years of age in the North Riding of Yorkshire, 14 per cent. are due to rickets in early life. Out of 6,566 boys and 6,224 girls examined during the ordinary routine medical inspection it was found that 3·9 per cent. of boys (or 1 in 24) and 1·7 per cent. of girls (or 1 in 60) show some degree of deformity due to past rickets, while 2·1 per cent. of the boys examined (or 1 in 50) and 1 per cent. of the girls (or 1 in 100) showed one or other of the more serious deformities of the chest, lower limbs, or spine, *i.e.*, showed a marked bony deformity. (For further particulars *see* p. 52).

* *See* Annual Report for North Riding of Yorkshire, 1922, pp. 11-17.

Dr. Robert Bruce* (Senior Assistant School Medical Officer, Glasgow), in a paper on "Defects in School Children," states that at 5 years of age 58 per cent. of the crippling found in school children is due to rickets and to rickets of a more pronounced type. The children affected are twisted and deformed, stunted in body and retarded in mental development. Many of them are quite unable to walk or even stand. He adds that the next most frequent cause of crippling among 5 year olds is tuberculosis, which is responsible for 9 per cent. of the total crippling.

Mr. Girdlestone, F.R.C.S., obtained particulars of 12,496 cripple children and found that in 35·4 per cent. the crippling disability was due to non-pulmonary tuberculosis, and in 52·5 per cent. to paralyses and congenital or acquired non-tuberculous deformities.†

Sir William Hamer reports that of 898 children suitable for admission to the London Special Schools for physically defective children in 1922, there were 160 due to paralysis, 212 tubercular children, 92 suffering from congenital or other deformity, 339 due to heart disease, and 95 affected with other disease.

Dr. James Wheatley (County Medical Officer of Health and School Medical Officer of Shropshire), reports that 240 cases have been treated at the Shropshire Orthopædic Hospital during 1922.‡ The analysis of cases according to causation was as follows:—

98	or	40·8	per cent.	due to	tuberculosis.
29	„	12·1	„	„	poliomyelitis.
17	„	7·1	„	„	rickets.
17	„	7·1	„	„	congenital deformities.
18	„	7·5	„	„	other deformities—postural or of doubtful causation.
11	„	4·6	„	„	injuries and diseases arising at birth.
12	„	5·0	„	„	infections other than tuberculosis (including rheumatoid arthritis, etc.).
27	„	11·2	„	„	other accidents and diseases.

160. It is estimated that 80-90 per cent. of the cripples can be cured, or at any rate, improved sufficiently to enable them to take a share in industry, if the disability is dealt with early and efficiently, and suitable and adequate educational training given. Thus although the treatment and the special training afterwards may be relatively expensive, it is an economy in the end, if the child becomes a producer instead of a dependant.

161. In addition to the congenital defects which must be treated as soon after birth as possible, the main illnesses causing crippling also attack the child most commonly within the first five years of life. Thus the incidence is largely prior to school life and may be roughly stated as follows:—§

Infantile paralysis, from 0-3 years;
Rickets, from 6 months to 2 years;
Non-pulmonary tuberculosis, from 0-5 years.

* Defects in School Children, "British Medical Journal," August 26th, 1922.

† "The Lancet," January 8th, 1921.

‡ Annual Report for Shropshire, 1922.

§ See Report of the Chief Medical Officer of the Board of Education for 1919, (Cmd. 995), pp. 104-105.

Dr. Hartley Martin† of Leasowe Children's Hospital states that a marked contrast was noticed in the physical condition of the cases discharged recently, as compared with those discharged during the early days of the hospital. The severe crippling produced by tuberculous disease of the hip and spine is no longer noticed, due to the fact that cases are admitted soon after the onset of disease, and that the early institution of treatment prevents the marked destruction of bone which is responsible for the severity of the deformity and the interference with the growth of the child. Therefore, to deal satisfactorily with the problem of the cripple child, early ascertainment of these defects is essential. This early ascertainment can be obtained through the close co-operation of health visitors visiting under the Notification of Births Act, maternity and child welfare centres, day nurseries, nursery schools, clinics, care committees and voluntary associations, hospitals and general practitioners with the public health and education services.

162. The defect having been detected and reported to the local authority, the following means exist for dealing with it:—(1) Hospital schools; (2) Orthopædic and after-care clinics; (3) Physically defective or cripple schools; (4) Remedial exercise clinics; (5) Vocational courses (for persons over 16 years of age).

(1) *The Hospital School.*

163. The Hospital School is an institution conducted on open-air lines where active treatment is undertaken and education is given at the same time as part of the treatment. To this are admitted children with active disease or those requiring operative treatment for removal of some deformity or disability.

164. The following institutions* for tuberculous disease only have been approved by the Board of Education or the Ministry of Health, or by both:—

Berkshire, Ascot, Heatherwood Hospital	...	...	...	...	152
Bristol, Frenchay Park Sanatorium (pulmonary and non-pulmonary)	...	...	...	...	35
Cheshire, Leasowe, Liverpool Open-Air Hospital	...	...	...	...	237
Denbigh, Llangwyfan, North Wales Sanatorium	...	...	...	...	50
Essex, Loughton, High Beech Hospital	...	...	...	...	31
Hants, Alton, Lord Mayor Treloar Cripples' Hospital	...	...	...	...	263
Hants, Hayling Island, Lord Mayor Treloar Branch Hospital	...	...	...	...	50
Huddersfield, Bradley Wood Sanatorium	...	...	...	...	38
Kent, Broadstairs and St. Peters, Clevedon	...	...	...	...	24
Kent, St. Nicholas at Wade Branch Hospital	...	...	...	...	38
Kent, Sevenoaks, Children's Hospital for Hip Disease	...	...	...	...	38
Kent, Swanley, Alexandra Hospital	...	...	...	...	51
Leicester, Groby Road Sanatorium	...	...	...	...	18
Liverpool, Fazakerley Hospitals and Sanatorium (mixed pulmonary and non-pulmonary)	...	...	...	...	86
Margate, Princess Mary's Hospital	...	...	...	...	271
Margate, Royal Sea Bathing Hospital	...	...	...	...	115
Margate, Victoria Home for Invalid Children	...	...	...	...	52

† Liverpool Open-Air Hospital for Children, Leasowe, Report for 1922.

* The figure following the names of the institutions indicates the approximate number of beds available for children.

Northumberland, Stannington, The Philipson Children's Sanatorium (mixed pulmonary and non-pulmonary)	250
Nottingham, Gringley-on-the-Hill, Children's Hospital	30
St. Helens, Eccleston Hall Sanatorium (mixed pulmonary and non-pulmonary)	30
Sheffield, King Edward VII Memorial Hospital	130
Staffs.—Himley, Staffs, Wolverhampton and Dudley Joint Councils	37
Surrey, East Clandon Alexandra Hospital	22
Worcestershire, Bromsgrove, The Forelands	80
Worthing, Home of the Holy Rood	6

165. The following institutions* have been approved for tuberculous and non-tuberculous cases :—

Berkshire, Coldash Children's Hospital	30
Birmingham, The Woodlands	97
Bristol, Redland Orthopædic Hospital	36
Cheshire, Heswall, Royal Liverpool Children's Hospital (medical and surgical cases)	146
Cheshire, West Kirby Convalescent Home (medical and surgical cases)	70
Folkestone, Bruce Porter Memorial Home	40
Hants, Hayling Island, St. Andrew's Home	65
Hertfordshire, Barnet Children's Home Hospital	20
Kingston-upon-Hull, Park Avenue	18
Liverpool, Greenbank Lane, The Children's Rest	50
Liverpool, Thingwall Hall Hospital	26
London, Chelsea, Cheyne Hospital (includes a few medical cases)	50
London, Islington, Tollington Park, Wray Crescent Hospital Home	19
London, St. Marylebone, Royal National Orthopædic Hospital	100
Manchester, Swinton House	119
Middlesex, Eastcote, St. Vincent's Roman Catholic Cripples' Home	100
Middlesex, Stanmore, Royal National Orthopædic Branch Hospital	40
Oxfordshire, Headington, Wingfield Orthopædic Hospital ...	52
Rochdale, Memorial Home for Crippled Children	50
Shropshire, Orthopædic Hospital (Park Hall, Oswestry) ...	147
Southport, Bradstock Lockett Hospital Home	50
Stoke-on-Trent, North Staffordshire Cripples Aid Society Orthopædic Hospital	36
Sunderland, Royal Infirmary Children's Hospital (medical and surgical cases)	66
Surrey, Carshalton, Queen Mary's Hospital (medical and surgical cases)	825
Surrey, Pyrford, St. Nicolas Hospital Home	100
Sussex, Hartfield Hospital Home	57
Warwickshire, Coleshill, St. Gerard's Roman Catholic Children's Hospital	58
Westmorland, Windermere, Ethel Hedley Hospital for Crippled Children	40
Yorks, W.R., Thorp Arch, The Marguerite Home (includes a few medical cases)	70

166. Applications for recognition by the Board have recently been received from a number of other institutions, but unfortunately owing to the present financial circumstances, they have had to be refused.

* The figure following the names of the institutions indicates the approximate number of beds available for children.

General Arrangements.

167. Where both tuberculous and non-tuberculous cases are admitted into the same institution it is desirable that they should be placed in separate wards, in any event cases of open tuberculosis, infective or with discharging sinuses, should not be accommodated with non-tuberculous cases. The length of stay in hospital varies according to the type of disease. For a tuberculous case it varies from six months in an early case of tuberculous knee to two, three or more years for a spinal case, while the length of stay for a non-tuberculous case may vary from two or three weeks for a simple operation such as tenotomy and osteotomy to six months or more for a case of poliomyelitis or congenital hip. As regards rickets much can be done if taken early by dieting and general treatment, simple splinting, massage, etc., while operative treatment may only need to be resorted to in the severe and late cases to straighten and remove deformity.

168. *Methods of Treatment.*—Owing to the development of the technique of orthopædic surgery much is now done for the cripple child which a few years ago was thought to be impossible. Old methods are being improved and more rapid and better results are obtained. Sir Robert Jones has suggested that the principles of the proper treatment of *paralysis* in children may be practised in four stages: at onset, rest by immobilisation; in the second stage correction of deformity by splints and bandaging; in due course slow development of muscles and their re-education in function by massage and electrical stimulation; lastly, the obliteration of deformities, when necessary, by surgical intervention.* Mr. Girdlestone has described the practical steps by which he applies these principles at Wingfield and its surrounding out-patient clinics.† In *tuberculous disease* conservative treatment is now practically universal, and in the case of the tuberculous joint immobilisation, with or without extension, whether by frame, caliper or simple splint of iron, wood, or plaster, is the aim of all schools of orthopædic surgery. Added to this are many auxiliary methods such as heliotherapy, balneotherapy, X-rays and other electrical methods of treatment, chemotherapy and vaccine treatment.

Heliotherapy is carried out at most of the larger and many of the smaller institutions. Occasionally, special sun-platforms or solaria are built for the purpose, but more commonly the ordinary balcony or verandah with a southern aspect is used and is all that is required. To avoid excessive and possibly harmful reaction the amount of the body exposed, starting from the feet upwards, and the length of exposure is increased gradually and cautiously according to the degree of pigmentation, until the whole body is exposed continuously whenever sunshine is available, the patient's head being protected throughout by a sun hat or canopy. Strict and careful supervision is maintained throughout the period of sun treatment to prevent blistering and excessive erythema.

Institutions in the South of England are able to carry out heliotherapy usually for 6 months or more of the year, but in the North where the climate is more bleak and has less sunlight, the period for insolation is much shortened. The most impressive effects are seen with local lesions; sinuses healing, sequestra sometimes being spontaneously extruded, and mobility of the affected joint returning. At the same time there is improvement in general vitality and usually gain in weight is effected.

* Proceedings of Royal Society of Medicine, 1922, Vol. XV, No.10, p. 35.

† *Ibid.*, 1922, Vol. XV, No. 12, p. 59.

Dr. Hartley Martin,† of Leasowe Children's Hospital, reporting on the work of the year ending December, 1922, states that:—

"Much disappointment arose owing to the unusual nature of the weather during the summer months. Owing to the lack of sunlight, the usual routine exposure of the children to the sunlight could not be practised, and the marked improvement in the health of the children which follows this exposure could not be achieved.

"This partly explains the reason in the falling off in the number of cases discharged, the children being retained in hospital for a longer period than is usual; but the chief reason for the greater average duration of stay is that, owing to the poor economic conditions of the homes to which the majority of the children return, an attempt has been made to avert relapse of the disease by prolonging the period of convalescence.

"Another result of the absence of sunshine has been the interference with work of investigating the blood response to sunlight which had been begun during the summer of 1921. The facts then observed were that the phagocytic power of the blood, as indicated by the differentiated nuclear leucocyte count was improved as a result of exposure to sunlight, and that the health of the child improved *pari passu* with this.

"An attempt has been made during the winter months to produce this result by exposure to radiant heat, but, although the experience of this method is limited, the results achieved do not appear to be helpful."

Balneotherapy in conjunction with heliotherapy has been found most useful, particularly in patients with sinuses and in lupus cases. But careful selection of the cases is necessary as it is found that amongst others, very young children and non-pigmenters are not suitable for this method of treatment. In this Country experimental work in this method has been carried out in recent years at Lord Mayor Treloar Hospital, Hayling Island.* Sir Henry Gauvain says:—

"Ambulant patients first paddle for increasing periods, later are sprayed with cold sea water over increasing areas of the body and finally full immersion is permitted. Recumbent patients are first progressively sprayed, later immersed as their condition permits and for carefully graduated periods. A brisk reaction is sought and this is hastened by taking each patient from the sea, placing him within a wattle-protected enclosure, where he is wiped down before the radiant heat of an open coke brazier. His feet are put in warm water and he is given a hot drink. Then follows a sun bath."†

Healing of sinuses and skin lesions frequently result and healthy scars are obtained, while the range of movement of an infected joint is increased. Another effect is an increase in the appetite followed by marked muscular development and increase of tone, and indeed a marked improvement in the general physical condition.

X-Ray treatment has been used most commonly in gland cases while artificial sunlight from the arc lamp or Finsen light and mercury vapour quartz lamp and diathermy have been used but less frequently for various tuberculous conditions including particularly, lupus.

Radiotherapy is used in some institutions with success in the treatment of tuberculous glands.

† Leasowe Report for 1922.

* "British Medical Journal," February 25th, 1922.

† "British Journal of Tuberculosis," July, 1922, page 108.

Chemiotherapy appears to be of most use in cases where there is abscess formation and sinuses; when modifying fluids, such as Calots fluid and paste and simple Iodoform emulsion as well as the war mixture named "Bip," have been found useful. Preparations of Brass in paste form and in oil and also the acid nitrate of mercury after scraping, have recently been used with great success in lupus.

Vaccine therapy has been found useful in carefully selected cases chiefly at the commencement of a mixed infection. Tuberculin is now comparatively rarely used.

169. *Accommodation*.—It will be seen therefore that hospitals for tuberculous disease need special accommodation and equipment. For instance, in addition to open air wards, solaria or verandahs for sun treatment, modern X-ray apparatus for treatment and skiagrams, laboratories for preparation of fluids and vaccines as well as for research work, plaster and cast rooms, splint and appliance rooms and an operating theatre are all needed in the modern hospital or sanatorium. The treatment of infantile paralysis and other non-tuberculous deformities has also advanced, and besides such accommodation as an operating theatre, plaster and cast rooms, splint and appliance rooms, and so forth, provision is needed for electrical treatment and massage.

170. *Education*.—An important adjunct to or part of the treatment is education. In addition to the purely educational value of the instruction given to children in hospital and sanatorium schools, it is now generally agreed that education constitutes an important factor in remedial treatment, and because of the interest aroused, it helps to keep the child contented and happy, acts as a stimulating influence, aids immobilisation and relieves the monotony of long recumbence. Many cripple children who obtain admission to these institutions have not been to school before, and others have been absent from school for long periods at a time so that it frequently happens that children aged 8-12 or more are admitted who cannot read or write. All, as a rule, are backward, as compared with a normal child, though some make more rapid progress than others, but it is unusual for any child to leave a hospital school who has not made some definite educational progress. The education, if carried out on right lines, is found to have a definitely stimulating effect mentally, and the children become noticeably brighter and more alert.

The children are generally recumbent, so that classroom accommodation is only needed for a small proportion, if any; most of the teaching taking place in the wards. Special apparatus and a special curriculum for individual teaching are required. A love of reading and good writing is specially encouraged, and a large part of the time is spent in handwork specially selected to develop the mental powers as well as the manipulative skill of the recumbent patients. The forms of handwork taken include drawing, and designing, needlework, including patching and mending, knitting, leather work, basket work, painting, modelling in plasticine, cardboard, etc. Usually, also, general knowledge occupies an important place in the curriculum, with daily talks on current events and newspaper readings, using the Children's Newspaper and the Children's Encyclopædia. In the country schools, special attention is also given to nature study, and in all schools singing, usually combined with breathing exercises, is given a prominent position in the time-table.

(2) *The Orthopædic Clinic.*

171. The Orthopædic Clinic or After-Care Centre is one of the most recent developments in connection with the hospital treatment of non-pulmonary tuberculosis and orthopædic cases. The clinic is a local centre, organised and managed in conjunction with a central hospital. By the formation of these clinics it is intended, first, to shorten the long period of institutional treatment otherwise needed; secondly, to make fuller use of existing hospital accommodation, and thirdly, to reduce expenditure.

172. The centres are used for (1) examination by the orthopædic surgeon of cases sent up for consultation by doctors, health visitors, infant welfare centres, etc., (2) the after-treatment and supervision of cases discharged from the hospital school, (3) the treatment of certain cases which can be effectively treated as out-patients, and (4) the renewing and repairing of plasters and fitting and examining splints and appliances. Thus a shorter period of stay in the central hospital is possible when there is a local centre where the patient can attend for expert supervision, and in this way the expenditure on residential treatment per case is lessened and the beds are released more rapidly for active treatment, and are not blocked by prolonged residence merely to ensure expert supervision. The local centres or clinics are distributed throughout an area, the size of which should be such that it can be adequately supervised by the staff of the central hospital, which in turn, should be large enough to cope with the number requiring in-patient treatment. At the same time the orthopædic hospital should be within reasonable distance (say 30 or 40 miles) of the clinics.

173. In the establishment of such a clinic it is essential that (1) the staff should include a visiting orthopædic Sister preferably from the central hospital, fully trained in orthopædic, splint and plaster work, who should attend the clinic once a week, (2) close association with the parent hospital should be maintained chiefly by the Sister going to and fro between hospital and clinic carrying reports of patients to the surgical staff, (3) there should be adequate supervision by an orthopædic surgeon visiting once a month, (4) a local voluntary committee should be formed to assist in getting children to and from the clinics and hospital, to collect funds for payment of splints and appliances, to pay visits to the homes, etc. The premises need not be elaborate. All that is required is 2 or 3 rooms in a school clinic, house, cottage or infant welfare centre, for use as waiting room, doctor's consulting room and plaster room, but it is important to see that the doctor's room is sufficiently large to enable him to see the patients freely walking and perhaps running. Also it should be well lighted, heated and ventilated.

174. The Orthopædic Sisters visit every clinic once a week to carry out the treatment ordered by the surgeon. One sister may have three or four clinics in her district. Their work includes re-application of plasters, readjustment of splints and appliances and reports of the condition of old and new patients to the surgeon. These clinics, as well as being centres for treatment and after-care, are also important as centres for early ascertainment and diagnosis, since any new case that is sent is examined by the expert and, if necessary, arrangements are made for admission to the Orthopædic Hospital. The clinics may also become centres for information and instruction.

175. At the present time there are four Orthopædic Hospitals working on these lines, sending out orthopædic surgeons and sisters to outlying clinics. The *Shropshire Orthopædic Hospital* has thirteen clinics scattered through the county and one in each of the following towns—Crewe, Hereford and Chester; the *Wingfield Orthopædic Hospital* at Headington has thirteen clinics distributed throughout Oxfordshire, Berkshire and Buckinghamshire; the *North Staffordshire Cripples Aid Society's Hospital* at Stoke-on-Trent has three or four clinics in different parts of Staffordshire; the *Ethel Hedley Hospital* at Calgarth Park, Windermere, sends out a doctor and after-care nurse to a clinic in Westmorland and seven clinics in Cumberland (see Special Report in School Medical Officer's Report, 1922, pages 34-43).

176. The chief facts noted as a result of the establishment of such a system of clinics may be summarised as follows :—

(1) *Economy effected in expenditure on orthopædic treatment.*

This is clearly demonstrated by the figures given in the Annual Report for 1922 on the *Shropshire Orthopædic Hospital* and After-care Centres where it is seen that the cost of out-patient clinic treatment per case per year is £2 12s. 4½d. as compared with £2 12s. 6d. per head per week, or £136 10s. 0d. per head per annum for in-patient treatment.

(2) *Economy in the number of beds required for in-patient treatment.*

A large part of the treatment can be carried out at the clinics, and a shortened period for in-patient treatment has been effected. The great majority of non-tuberculous cases can be treated almost entirely as out-patients or by one or more short periods, say ten days, of in-patient treatment. So that a much larger number of in-patients have been dealt with than would have been possible without clinics. In the Wingfield Hospital system, with 50 children's beds, there have been about 1,000 children attending the clinics, *i.e.*, for every in-patient there have been 20 dealt with as out-patients.

In the *Shropshire* system the results obtained in the year ending September, 1922, have been classified as follows :—

Number of cases treated	...	...	...	...	808
Cured	...	...	...	...	43
Improved	...	...	...	...	20
Left district	...	...	...	...	1
Treated elsewhere	...	...	...	...	4
Refused treatment	...	...	...	...	13
Incurable	...	...	...	...	1
Died	...	...	...	...	5
Still on books...	...	...	...	...	721

(3) *Economy to Local Authorities.*

The clinics have been conducted on the voluntary basis, and the Local Authorities have not been called upon to make any payment towards expenses of staff, upkeep of clinics, etc. (except in a few cases where school clinic premises are used). They have helped in many cases in the provision of instruments and appliances. Thus, when the clinic treatment and in-patient treatment are taken together, the average cost per head is considerably lowered.

Then there is a saving in the cost of transport and possibly in the provision of Special Schools, since by this method of clinic treatment the children are equipped with appliances enabling them to walk to an ordinary school and at the same time attend the clinic within reasonable distance of their homes, weekly, fortnightly or monthly as necessary.

This method not only does not interfere with the schooling but indeed enables many children to attend school who could not otherwise do so, unless placed in a residential school or taken by ambulance to a Day Cripple School, and thus prevents the child being institutionalised.

It would therefore appear to be a matter for consideration whether the extension of this system of out-patient clinics throughout the country would not eventually render the establishment of Special Schools for Cripple Children almost, if not entirely, unnecessary.

(4) *Early ascertainment has been obtained.*

Early doubtful cases are being sent to the clinics because they are near. Mr. Girdlestone reports that cases are now being sent up by doctors to the clinics in the very early stage of paralysis or deformity and local doctors come and see and quickly learn the importance of sending cases up early.

(5) *Close co-operation with Local Authorities has been effected.*

This has been particularly marked with regard to tuberculous cases. Mr. Girdlestone states that the Tuberculosis Officers as a rule attend the clinics, while the reports on home conditions are obtained from the Dispensary Health Visitors who do all the visiting in these cases.

(6) *Prevention of relapse.*

A very large proportion of the cases treated would have relapsed if it had not been for the following-up, supervision and after-care of these centres.

(3) *The Cripple School (Day and Residential).*

177. These schools are primarily for children who have had the appropriate hospital treatment but who have not been cured, or have not benefited sufficiently to enable them to attend the ordinary school. In large towns there are day schools to which the children are, if necessary, conveyed from their homes in ambulances. There is usually a nurse attached to the school to attend to the general care of the children and to supervise the splints and appliances.

178. In the *London* schools no treatment is provided but a large number of the children attend the different London hospitals as out-patients. There is a visiting Medical Officer whose duty includes advising return to hospital should he consider the physical condition unsatisfactory or that further measures would be helpful, and in addition there is a visiting Orthopædic Surgeon who pays periodical visits for the purposes of supervision and advice.

Mr. Elmslie,* M.B., F.R.C.S., in a report to the L.C.C., says that the routine examinations should be made by orthopædic surgeons. During the war period the routine examinations have had to be carried out chiefly by whole-time medical officers engaged on the general service of the Council. Naturally, the knowledge that these medical officers possess of the treatment of crippling deformities is limited and they take no part in the treatment of these conditions. Re-examinations should aim at a careful investigation of the children's condition with a view to suggesting any amelioration if possible. Moreover, surgeons who are actually occupied in the treatment of crippling conditions feel more confident in transferring children back to elementary schools than do the whole-time medical officers, who are inclined to leave a child with a slight physical defect in a physically defective school rather than run the risk of returning him to an elementary school at too early a stage.

Mr. Elmslie in examining 2,294 children in attendance at the London Physically Defective Schools in 1921, compared the findings with the results of similar examinations in 1907 and 1912 and makes the following statement—

“The first noticeable fact in a comparison of these figures with those of 1907 and 1912, is the diminution in the number of children suffering from deformities due to tuberculous disease and the increase in the number suffering from infantile paralysis. This does not necessarily indicate a diminished incidence of the first of these diseases or an increased incidence of the second. In examination of the individual cases it is noticeable that the physical condition of the children suffering from tuberculous disease is decidedly better than it was at the time of the previous examinations, and at the present only a very few of the children are attending the schools whilst they are under treatment for active tuberculous disease by means of frames, splints or plaster of Paris. In my opinion the diminution in the cases of tuberculous disease is due to two causes—(1) that there is now much more accommodation for in-patient treatment of this disease, so that a larger proportion of the children actually under treatment are in country hospitals; and (2) that the general level of the treatment has improved so considerably that more of the children become fit for transfer to ordinary elementary schools. The increase in the cases of infantile paralysis (poliomyelitis) is probably a relative one due to diminution of other conditions; it may, however, be partly due to an increased incidence or to the fact that paralysed children, who were formerly left out of school, have been brought in.”

He adds that in his opinion the findings show that there has been considerable improvement in the results of the treatment of tuberculous bone and joint disease in London, but that there is still room for improvement, the accommodation in the special hospitals not yet being adequate so that children have sometimes to wait for admission and are often still treated in the out-patient department of a hospital when they should be in-patients in a special institution.

With regard to infantile paralysis Mr. Elmslie states that the need for in-patient accommodation is still more marked; in fact, the necessity for providing really good treatment for this disease is the outstanding feature in his investigation of these children.

Somewhat similar arrangements have been made in other towns, but, with the exception of *Hull* and *Bradford*, no consulting Orthopædic Surgeon has been appointed for the Day Cripple Schools. In *Hull* arrangements have been made for the Orthopædic Surgeon to visit the combined Day and Residential School twice a week. In *Bradford* the Orthopædic Surgeon visits the Day School once a week.

* “*A Survey of Physically Defective Children.*” Report of the School Medical Officer submitting Report to the London County Council, by Major R. C. Elmslie, M.B., F.R.C.S., 1923, No. 2201.

179. Where day school accommodation is not available children can be sent to residential institutions in which suitable education is provided. The following Residential Schools have been approved by the Board. In each case the accommodation is given :—

Birmingham, Baskerville	42
Bournemouth, Victoria Home for Crippled Children	30
Edmonton, Winchmore Hill, Halliwick Cripples Home for Girls	40
Essex, Clacton-on-Sea, St. Michael's Convent of Mercy for Cripple Girls	55
Gloucestershire, Stroud, St. Rose's Roman Catholic	22
Hants, Alton, Lord Mayor Treloar Cripples College	50
Liverpool, Roby, Bowring House	50
Liverpool, Workshop and Home for Cripples	6
London, Hampstead Hospital and Home	49
Manchester, Bethesda Home for Crippled Children	70
Northumberland, Gosforth Cripples' Home	105
Oxfordshire, Chipping Norton National Children's Home	40
Salford, The Greengate Dispensary, Grimké Ward for Cripples	27
Surrey, Pyrford, St Martin's Home for Crippled Boys	40
Sussex, Chailey, The Heritage Crafts School	172

The need for these schools should become gradually lessened as the defects are found earlier and the appropriate treatment given, a larger proportion of children being eventually cured and prevented from becoming permanent cripples.

180. As regards education, a special curriculum is followed, particular attention being paid to manual work, and, in the case of older children, to preparatory vocational training. The classes are smaller than in the ordinary elementary school, so that more individual attention can be given. When the amount of time that the children spend away from school in out-patient departments, in hospitals, and at home for various reasons is realised, it will readily be understood that the majority of the cripple children are backward and need special attention.

(4) *The Remedial Exercise Clinic.*

181. This subject has been more or less fully dealt with in previous reports.* Clinics have been opened for the treatment by remedial exercises and massage, with occasionally some electrical treatment, of scoliosis (early and postural cases), flat foot, poor chest development and kyphosis, knock-knees, some paralysis, and for breathing exercises after tonsil and adenoid operations. It is essential that a fully qualified remedial gymnast, holding the certificate of the Chartered Society of Massage and Medical Gymnastics, should be in charge to carry out the treatment; that the medical officer in charge should have knowledge and experience of remedial work, and, in addition, it is desirable that the advice of an orthopædic surgeon should be available. Unless skilled advice is forthcoming the clinics in many instances are apt to become crowded with unsuitable cases, either (1) cases not requiring this special treatment, such as very mild postural cases, which can be dealt with in school; or (2) cases for whom no further treatment is of any use, such as old infantile paralysis cases. Thus there may easily be great waste of effort, and even actual harm may result from wrong treatment of muscles. At the present time a large number of the children attending these clinics would derive at least as much, and possibly more, benefit from "corrective" classes in free standing exercises and

* Chief Medical Officer's Reports for 1916, pp. 135-138; 1918, pp. 167-169; 1919, pp. 180-182; 1920, pp. 160-162.

simple movements carried out in the schools under the supervision of the Organiser of Physical Training. The classes should be small and should be held daily by a staff teacher sufficiently expert in physical education. In the meantime a certain number of children are receiving remedial treatment three or four times a week at special centres. Remedial Clinics, equipped with simple apparatus such as wall-bars, high and low plinths, reversible bench for balance work, have been provided by a number of Education Authorities* and approved by the Board. In ten of the areas the work is under the supervision of a visiting orthopædic surgeon.

Dr. Blaker,† now School Medical Officer of Dudley, reports that during school inspection work in *Colchester*, 123 cases of primary scoliosis were found out of 2,968 examined, and grouped according to the degree of curvature as follows:—

Class A. 99 cases with postural curves amounting to 1 inch.

Class B. 21 cases with postural curves amounting to $1\frac{1}{2}$ inches.

Class C. 3 cases with structural changes.

Of this number 86 received treatment for a period of not less than 6 months, the results being as follows:—

Quite cured with perfectly straight spines	...	...	11 cases.
Marked improvement	...	...	30 „
Moderate	...	...	21 „
No improvement	...	...	20 „
Worse	...	...	4 „

In all cases the general condition of the patient was considered. The dieting was improved and in some cases extra milk was ordered and general tonics prescribed. Children in Group A received their exercises from a teacher specially trained by the Physical Training Organiser and had their table of exercises daily. They also received physical training with their respective classes in the time set apart on the school time-table. Children in Groups B and C were directly under the Physical Training Organiser, and were taken at a special centre three times a week for 20-30 minutes, those in Group C, being first seen at the National Orthopædic Hospital, London.

In each school the Class teachers were asked to keep a special watch on these children to see that they did not assume faulty positions in the classroom and playground, and to see that they took their share in the games and recreations of other children.

(5) Vocational Courses.

182. Finally, in the severer forms of Crippling it is necessary to provide vocational training in the special forms of manual work suited to the special defect for those above the special school age (16 years). Such courses of training have been provided at a number of centres where Cripples over 16 years of age are taken for two and three years to be taught a trade. For example, at *Alton College* boys are taught leather bag and case making, tailoring and bootmaking, whilst at the *Wingfield Orthopædic Hospital* bootmaking and leatherwork, carpentry and surgical instrument and appliance making are taught. In *Liverpool* there are Workshops for Cripples where bookbinding, leatherwork, needlework and embroidery are taught. At the *Halliwick Crippled*

* Cumberland (7), Herts (12), Lincs. (Lindsey) (2), London (3), Bath, Birmingham, Blackburn, Bootle, Bradford, Colchester, Croydon, Halifax, Leeds (5), Leicester, Macclesfield, Manchester, Newcastle-on-Tyne, Nottingham, Plymouth (2), Reigate, Sheffield, West Bromwich, Worcester, York. Where more than one clinic have been established the number is given in brackets after the name of the Local Education Authority.

† "The Medical Officer," June 24th, 1922.

Girls' Home, *Winchmore Hill*, the girls are taught dressmaking, and in London, at the Love Walk Training School for Invalid and Crippled Girls, *Camberwell*, training in needlework and embroidery is provided. At the Heritage Craft Schools, *Chailey*, cabinet making and fine needlework are the chief trades taught. All the above, with the exception of the course at the Wingfield Hospital, are approved by the Board under their Regulations for Vocational Courses, and each is aided by grant. Each course provides some elementary instruction to make good what has been missed in the younger school days. At *Alton* Sir Henry Gauvain states that at first the College was started with the idea of only technical training, but it was soon found that many boys had spent the greater part of their lives in hospital and had had no education at all, so that an elementary educational side was developed also. The boys are there for three years, and during that time are given an intensive education suited to their special requirements. At first the elementary subjects were taken after the workshop hours, but that was not enough time, and so $1\frac{1}{2}$ hours a day were taken from their workshop hours for this special education, and yet, in spite of that time being taken from their technical time, the amount of work done in the workshops has greatly increased.

183. Such then is the scheme for dealing with the Cripple child. It represents a new understanding of the problem and its solution. "For," as Mr. Girdlestone says, "although there has indeed been great progress in the Surgery of Paralysis and Deformity it is a wider conception of the help that can be given to these cripple children, together with an extensive and closely knit organisation, that has made the results of treatment so good and so permanent. The 'new orthopædics' include :

" (1) Organisation to ensure the discovery and prompt treatment of children when first paralysed, deformed, or otherwise threatened with crippledom.

" (2) The provision of the most effective treatment possible (in clinic and hospital).

" (3) Organisation of after-care and restoration of activity.

" This early discovery and prolonged after-care depends on the provision of Orthopædic Clinics throughout the district served by the Hospital, and making each clinic a centre of local interest in the work. . . . By early discovery, by highly developed treatment, and by prolonged after-care, the physical handicap is eliminated or reduced to a minimum. By education and workshop apprenticeship persons who would otherwise be dependents are made self-supporting. Even when the Hospital, as still often happens, has to take in children who are seriously ill and severely crippled, it endeavours to turn them out as fully cured and active as possible and to endow them with a normal self-reliant outlook." Above all, public authorities should exercise the powers they possess to *prevent* the conditions which tend to cripple children—tuberculosis, rickets, paralysis, congenital defects and accidents at child-birth, in infancy or subsequently. There is no universal remedy. Public and personal hygiene, housing, cleanliness, dietary, milk supply, all have their ultimate effect, and the improvements of the last twenty years give good promise for the future.

IX.

SPECIAL SCHOOLS FOR DEFECTIVE CHILDREN.

184. The group of schools which since the passing of the Elementary Education (Blind and Deaf Children) Act in 1893 and the Elementary Education (Defective and Epileptic Children) Act in 1899 have been known as Special Schools, continued during 1922 their educational provision for children who are precluded from attendance at Public Elementary Schools owing to limitations imposed by reason of serious physical or mental defect. While as a result of the present national financial stringency an embargo has been placed on the establishment of new schools, the Board have encouraged the utilization to the full of the existing recognized accommodation in the schools (*see* Circular 1,269 issued in July, 1922).

185. The following figures summarize the returns furnished by Local Educational Authorities in 1922 of the number of ascertained exceptional children of school age in England and Wales :—

1. Blind (including partially blind)	...	...	...	5,600
2. Deaf and Dumb (including partially deaf)	...	...	...	5,950
3. Feeble-minded	...	...	...	29,250
4. Imbeciles	...	...	...	4,850
5. Idiots	...	...	...	850
6. Epileptics	...	...	...	7,350
7. Tubercular (pulmonary)	...	...	...	20,000
8. Cripples (tubercular)	...	...	...	12,000
9. „ (other than tubercular)	...	...	...	23,750
10. Other physical defectives	...	...	...	42,500
				<u>152,100</u>

Of these children, 127,600 were found to be in attendance at Public Elementary and Special Schools; the remaining children were not in attendance at any school.

186. The following table shows the present provision in Special Schools. It is apparent from a consideration of the foregoing figures and those in the table that the present provision is wholly inadequate to meet the ascertained need.

Number of Special Schools and other particulars.*

	Number of Schools.				Present Accommodation.	Number of scholars on Registers on 31st March 1922.
	In England.	In Wales.	Provided.	Voluntary.		
Blind	69	3	53	19	3,664	3,374
Deaf	49	2	37	14	4,636	4,098
Mentally Defective	192	6	183	15	16,202	15,975
Physically Defective	75	—	60	15	6,588	6,863
Tubercular	65	1	30	36	4,271	3,646
Epileptic	6	—	1	5	508	480
Open Air	61	1	50	12	4,355	3,924
	517	13	414	116	40,224	38,360

* A complete list of special schools of all types is published as Board of Education List 42.

187. In January, 1923, the Board informed† Local Education Authorities and Managers of Special Schools that they had in view both the simplification of the Regulations and a reduction in the cost of conducting Special Schools. The high cost of these schools has had the inevitable effect of restricting their provision and in present circumstances has prevented even their normal expansion. Although the Board do not disparage the ideals which have been pursued in the conduct of the best of these schools, they have been forced to the conclusion that some compromise with these ideals is necessary if, within a reasonable time, adequate provision of schools is to be made for the children who require the special forms of education which they offer, and that the balance of advantage lies on the side of making less costly arrangements for greater numbers. It is only by reducing the cost of the schools to the lowest figure, compatible with efficiency, that the Board can hope, with the co-operation of Educational Authorities and Managers, to attain within a reasonable time a position in which no child shall, through lack of accommodation, be denied the benefits to which he has a claim.

The Special Schools in London.

188. The following table summarizes certain particulars of the Special Schools in London :—

Classification of Schools.	Number of Schools.	Accommodation.	Average No. on roll during 1921–22.			
			Boys.	Girls.	Mixed.	Total.
Blind	8	342	45	69	202	316
Partially Blind (myopic)	25	740	—	—	799	799
Deaf	9	664	89	68	485	642
Partially Deaf (Hard of Hearing).	5	132	—	—	137	137
Mentally Defective ...	92	7,544	1,642	915	4,811	7,368
Physically Defective :—						
(a) Cripples	39	3,805	234	166	3,657	4,057
(b) Tuberculous ...	5	370	—	—	398	398
(c) Open-air day Sanatorium.	1	25	—	—	25	25
Open Air	4	510	—	—	434	434
Camp Schools	3	404	257	59	39	355
Total	191	14,536	2,267	1,277	10,987	14,531

189. The Authority also sends blind, deaf, defective and epileptic children to non-Council Schools situated, as a rule, outside the County. The approximate number of Council School children in these schools is : blind 26, deaf 62, mentally defective 33, physically defective 28, and epileptic 95. The estimated gross cost of these children for the year ending 31st March, 1923, is : (a) children attending the Council's Special Schools, £566,892; (b) London children attending non-Council's Special Schools, £19,050; total, £585,942.

† Circular 1297 of 29th January, 1923.

190. *Blind* children between the ages of five and thirteen attend day schools. Children who live too far from these day schools to attend as day pupils, or where home circumstances are undesirable, are boarded-out with foster parents, by the Council, in the neighbourhood of one of these schools. Upon reaching the age of thirteen the children are transferred to one of the two residential schools. The Council also send some blind children, by reason of health, etc., to institutions for the blind in different parts of the country.

191. In the schools for the *mentally defective*, nearly half the time is given to manual work. The elder boys and girls are taught in separate schools. Specially difficult cases are accommodated in residential schools. Medical history sheets and progress books are kept in respect of each child in the school, and the child is kept under observation from an after-care point of view until it reaches 18 years of age.

192. There are some 4,500 children of school age in London medically certified as *physically defective* who are accommodated in 35 day Special Schools. As far as possible, the methods employed are the same as those applicable to the ordinary elementary schools of the Council, but the curriculum and conditions are necessarily adapted to meet the needs of the physically defective children. Special arrangements are made for the conveyance of these children to and from school.

The Training of Blind and other Defective Students over 16 years of age.

193. There are 32 Institutions recognized by the Board under Grant Regulations No. 21 providing for the vocational training after the age of 16 of the blind, 3 providing for the deaf, 5 for cripples, and 3 for epileptics. All of these are organized and administered by voluntary managers, with the exception of two, which are provided by the London County Council. The Education Act, 1918, placed the duty on Local Education Authorities of providing for the suitable education of blind persons capable of profiting thereby. The Blind Persons Act passed in 1920 again drew attention to this fact, and consequently there has been a substantial increase during recent years in the number of students under instruction. The number of students in the recognized institutions on 31st March, 1922, was 1,084. During 1922-23 the Board approved 6 new institutions which provide training for the blind. These provide accommodation for 125 students.

194. In May, 1922, the Board informed Local Education Authorities that they recognized the importance of enabling blind children leaving Special Schools to obtain a further period of education and technical training such as will enable them to become in large measure self-supporting in those branches of employment which are open to them, and they are anxious that, so far as it is consistent with present economic conditions, there shall be no curtailment of the opportunities for training provided in the Institutions recognized by the Board.

Under the Regulations vocational courses have been approved at institutions situated in Blackburn, Bolton, Birmingham, Bradford, Brighton, Bristol, Croydon, Dewsbury, Edmonton, Exeter, Kingston-upon-Hull, Leatherhead, Leeds, Leicester; Liverpool, London, Newcastle-upon-Tyne, Norwich, Nottingham, Plymouth, Preston, Sheffield, Sunderland, Swansea, York, and other places in Buckinghamshire, Lancashire, Surrey, Sussex and Hampshire.

195. The Ministry of Health, after consultation with the Board of Education, addressed a letter* in April, 1923, to County and County Borough Councils, Local Education Authorities, Boards of Guardians and Voluntary Agencies for the Welfare of the Blind on the desirability of co-operation between Local Authorities and Managers of Institutions in activities relating to the training and employment of the blind. They pointed out that the primary object of training a blind person should be to fit him for following some definite vocation in which he can become in greater or less degree self-supporting, and through which he will acquire that self-confidence and independence essential to his own future welfare and happiness. In order that this object may be achieved, and that an adequate return on the cost of training may be ensured, it is necessary that the greatest care should be taken to see that the training is such as will lead naturally and without discontinuity to the vocation which he is to follow in after-life. The Ministry outlined several suggestions concerning (a) the modification of the curriculum for the older children in Special Schools in the interests of early vocational training; (b) the progress record kept in respect of each pupil in the Special School; (c) the choice of occupation for training; (d) the assessment of the students' capacity during training; and (e) the advisability of the progress record referred to in (b) being passed on to and kept up to date in the Training Institution.

* Circular No. 387. Price 1d. Net.

THE MENTALLY ABNORMAL CHILD.

196. In several previous Reports attention has been drawn to the great problem of the school child who is mentally below the average.* It is a question which is both far-reaching and urgent. It is far-reaching, because the whole fabric of legislation which deals with mental deficiency is founded upon the idea that it is in childhood that the problem must be grappled with. It is urgent, because various types of social betterment await its solution. Unemployability, industrial incapacity, delinquency and crime are found not infrequently to have their origin in neglect of the child who is mentally abnormal. The nation is not only losing every year by misdirection of money expended upon the education of these children, it is losing still more heavily by their subsequent incapacity in industry or by their delinquency.

197. There is another reason why I think it is necessary again to lay emphasis on the importance of this subject, and it is this. In spite of the statutory obligation which Parliament has placed upon the Local Education Authorities, it appears that many of them are not discharging these duties. There are no doubt substantial grounds for this failure. First, there are the inherent difficulties of determination and differential diagnosis, the uncertainties of a transitional period of medical and psychological knowledge; and secondly, there is the lack of financial and other resources to carry out the education, medical treatment and custody which are required. In the meantime, however, the situation becomes more rather than less difficult, and calls for the careful consideration of every Authority and every School Medical Officer. I propose, therefore, to refer, briefly to some of the outstanding points.

(1) The Retarded Child.

198. In previous reports I have divided the subject of the mental condition of the school children into five groups.—

- (1) The child that is mentally normal.
- (2) Dull and backward children.
- (3) The feeble-minded child.
- (4) The imbecile.
- (5) The idiot.

The majority of children are happily in the first group, and with them, and the last two groups, we are not here concerned. It is the second and third groups, and the border line cases of each group, which call for our attention; and first we must consider the second group.

199. Dull and backward children are retarded in growth and development. We may define them as one group, or we may differentiate between them by describing "dull" children as those having inborn mental impairment, and "backward" children as those hindered in their normal development by external agencies. Retardation is not, in any case, a simple mental condition or defect, but is a complex

* See Reports for 1912, 1913, 1917 and 1920.

result attributable to a variety of causes. Of these, there are two main categories (a) intrinsic or mental, (b) extraneous or non-mental. The *mental factors* are apparently inborn and account for 60 per cent. of cases ("dull children") and include :—

(i) *Weak General Ability*.—Inferiority of all-round mental efficiency; not sufficiently pronounced to be denominated mental deficiency.

(ii) *Specific Scholastic Inability*.—Affecting several or one group of subjects, often compensated by aptitude in other directions.

(iii) *Character Defects*.—Inborn instability.

(iv) *Impaired Mental Growth*.—Associated with slow physical development.

The *non-mental factors* account for about 40 per cent. of the cases ("backward" children) and include :—

(i) *Irregular Attendance*.—Late admission, frequent or prolonged absence due to ill-health, exclusion for uncleanness, infectious diseases, home negligence, migration.

(ii) *Inefficient Teaching in Earlier Years*.—Discontinuity between infants and senior departments, change of teaching methods with change of school.

(iii) *General Physical Defect*.—General physical weakness, malnutrition, loss of sleep, excessive fatigue from out of school employment, bad home conditions.

(iv) *Physical Defects*.—Tonsils and adenoids, visual and dental defects, deafness, external eye and ear diseases, skin defects, paralysis, speech defects, etc.

(v) *Character Defects*.—Arising out of environmental experiences, laziness, inattention, temper, disobedience, etc.

For the purpose of diagnosis it is becoming usual to apply the Binet-Simon Scale or the Stanford Revision (Terman) to these children.

200. Several special inquiries have been made by school medical officers in 1922, of which I may quote two as illustrations. Dr. Beggs of *Middleton* has investigated 272 retarded children, as to five points, mentality, educational standard, home conditions, previous illnesses, and physical defects, and he furnishes tables of great interest showing the relative effect of these conditions. Under the last heading he tabulates a comparison with the medical findings in routine inspection of normal children, as follows :—

Defect.	Retarded. per cent.	Routine. per cent.
Malnutrition	51·25	13·17
Nose and Throat	68·75	45·5
Defective Vision	66·25	16·17
Ear Disease and Defective Hearing	12·5	3·21
Defective Speech	8·75	·52
Rickets	7·51	1·28

Thirty-five per cent. of the retarded children had four physical defects each.

201. Dr. Joseph (Warrington) working on the same subject points out that in common with other parts of the country one of the most pressing problems he had to deal with during the year was the housing of the people. Out of 1,851 applicants for tenancy of municipal houses no less than 673 were living under overcrowded conditions. An attempt was made to ascertain the relationship between the home and life of the children and their mental and physical condition. 366 children were subjected to investigation as regards (a) mental and physical condition, (b) hygienic conditions at home, (c) overcrowding and (d) parental care. Dr. Joseph concludes from his investigation that mere overcrowding has not so deleterious an effect on the mental or physical welfare of the child as have other bad hygienic conditions or lack of parental care; and of the items coming under the fourth heading the most important is the lack of provision of suitable properly cooked food.

202. The late Mrs. Frances Wood left a series of important data based on the use of Mr. Cyril Burt's tests on the Relation of Home Conditions and the Intelligence of School Children which have been edited by Dr. Isserlis and issued as a memorandum by the Medical Research Council.* The object of the research was to examine the connection, if any, between the child's home environment and the economic position of the parents, and his own physical characteristics and mental development. Children were investigated in three schools in poor areas, in London and Barking. The assistance of teachers was obtained in regard to assessment of the scholastic position and social grade of the children. School records were consulted and details of height and weight, cleanliness, clothing and nutrition obtained from the school medical cards—further, the names of children who were fed at school were obtained from the returns of care committees. In this way physical data were obtained as well as fuller evidence as to home conditions. Though Mrs. Wood did not live to complete her findings, it has been possible to summarise her conclusions in the following terms:—

(1) The mental tests suggested by Mr. Cyril Burt are significantly correlated with the teacher's estimate of intelligence and such tests may be legitimately employed for the purpose of obtaining uniform standards of grading intelligence.

(2) There is distinct correlation between the intelligence of school children and their environment, whether measured by the economic position of the parents, by the care taken of the home, or by the clothing of the children. The partial correlations for constant age are uniform in sign, of order '3 to '4 and five to six times greater than their probable errors.

(3) There is no significant difference in these respects between boys and girls.

(4) It is desirable to collect contemporaneous data of the physique, the intelligence and the environment of school children; unless such further measurements disclose no significant partial correlations save between physique and intelligence, conclusion (2) will stand.

(5) On the present data we are entitled to conclude that progressive improvement in home conditions may be expected to react favourably not only on the health but also on the intelligence of school children. Another argument, if additional arguments are needed, is thus provided for further efforts to ameliorate the home conditions of the children who attend elementary schools.

* *The Relation between Home Conditions and the Intelligence of School Children*, by L. Isserlis, M.A., D.Sc., from data collected by the late Mrs. Frances Wood, B.Sc., Medical Research Council, 1923, 1s. net.

The Social Burden of Backwardness.

203. We cannot say how many children in the Public Elementary Schools fall within the category of those whose mentality is retarded. Mr. Cyril Burt, the psychologist to the London County Council, demonstrated in 1918 that the number "may be assessed at 10 per cent. at the very lowest estimate." In the whole County of London he says that the number of backward children between the ages of eight and fourteen years is 30,000 to 50,000. If it be assumed that the degree of backwardness throughout the country is not less than in the metropolis, we are faced with an estimate of not less than 600,000 backward children of school age in England and Wales; nor must we overlook the fact that this group is unable to respond with proper benefit to our educational system and adds 50,000 recruits to our industrial army every year who are not only unprepared by mental retardation to meet effectually the demands of a full life, but who furnish society with the bulk of its inefficient adults—criminals, paupers, mendicants and unemployables. It is a serious national issue.

No doubt there are various factors and agencies which must be directed to the solution and prevention of this most preventable problem of backward children. But in the present report any suggestions must be restricted to education and to the means available through the School Medical Service.

204. Educationally we have to realize that the backward child is a "misfit" in our present scheme. The school standards do not suit his needs, and without special provision he has a tendency to become incapacitated and unemployable. A number of areas have provided special classes, in which the ordinary curriculum is moderated in requirement, and liberal substitutes of manual training are offered. (*Manchester, Coventry, Wigan, Brighton, etc.*)

It must be remembered, however, that manual work is not a universal panacea for educational backwardness, though the reason of its introduction is quite sound on physiological and psychological grounds. The principles which should guide any educational change are:—

(1) The need for schooling under the best health conditions—open-air facilities, adequate feeding, exercise, rest;

(2) The need for a proper understanding of the mentally debilitated child which shall reach his mind and fortify it adequately—and this means individual, intelligent and practical teaching.

For the large majority of dull and backward children the proper school will be the Public Elementary School and not the "Special School." Where their numbers make it possible, and the extent of their backwardness makes it desirable, separate classes should be formed for them within the Public Elementary School under teachers specially selected for their aptitude for this work, and with a curriculum and time-table modified to suit their special needs. But, as a general principle, every effort should be made to associate them as much as possible with mentally normal children, and, even if they are organized in separate classes for the more academic side of their instruction, they should join the other children for physical exercises, games, etc. The one immediate necessity is that every Local Education Authority should consider this problem, which now exists in their schools.

(ii) The Mentally Defective Child.

205. It is essential to distinguish mental deficiency (or feeble-mindedness) from mere backwardness. The former is a specific mental derangement, the latter is a temporary mental impairment due to external conditions, the removal of which would cure the condition. We are here faced with a specific pathological condition which is innate. We have to attempt to ameliorate and by special training equip the child for the most useful sort of life of which it may become capable.

206. In the Report for 1920 the principal tests for the diagnosis and measurement of this malady are described. They are steadily undergoing improvement and adjustment. In principle they are three in number :—

(i) *Educational Tests* as being in line with the general mental direction given by the school, including graded exercises in reading and counting. (“ Educational Quotient.”)

(ii) *Intelligence Tests* devised to assess intelligence by the use of graduated series of questions not necessarily connected with school attainments. (“ Intelligence Quotient.” Binet, Terman, Porteus, etc., tests.)

(iii) *Environmental or Social Tests*, consisting of general questions intended to elucidate the mental relationship of the child to home, out-of-school occupations, to social and industrial capacity, to teachers, friends and the world in which it moves, with a view of correlating these findings with the results of education and intelligence tests, and of determining to what extent the child is likely to manage for itself after the expiry of school age.

207. The use of Educational tests will continue to a large extent to form the basis of the school estimate of the mental value of the child. They fall within the ordinary routine of school life, can be applied and are being applied periodically by every competent teacher. It is interesting to note that the growing experience indicates a close mathematical correlation between the results obtained from school tests and those obtained by the use of intelligence tests. This fact seems to increase the confidence to be placed in the school estimate of a child as regarded from the point of view of psychological medicine. Intelligence tests are nevertheless becoming more widely used by both medical officers and teachers. Dr. R. E. Thomas (*Bath*), working in conjunction with the head mistress of one of the Bath Schools, and employing the Terman variety of the Binet Simon test, concludes *inter alia* that (i) group tests divide the average or nearly average children from the non-average, and help in grading those who are average; (ii) the individual application of Terman tests gives valuable information about non-average children, indicating their final school achievement at leaving age, and their probable yearly rate of progress.

208. Dr. Daniel (*Middlesex*) expresses a view well within the experience of those who deal with exceptional children that the “ measurement of intelligence ” may have little value, unless an attempt is made to gauge the temperament of the child before setting to work on the examination proper. One must get on good terms with the child, reduce the examination atmosphere to a minimum, recall one’s own childhood, and so come into closer touch with the child’s outlook.

209. Dr. Shrubsall adds to the *London Report* a useful discussion of the criteria and tests to be applied for certification of mental deficiency, including attainments, physical characteristics, mental tests and social activities. He rightly points out that the bare fact of pass or failure with tests, apart from observation of the methods employed, does not give a true idea of mentality. Emotional and temperamental failures, of which shyness, obstinacy and irritability are familiar examples, give rise to difficulty, and, when necessary, such cases should be specially re-examined, in order that the certifying officer may with greater certainty obtain the best possible responses from the child. Further, the results of mental tests should be considered in the full light of the physical conditions and temperamental factors of the subject, and the whole behaviour as observed and recorded—and as known to the teacher—should be interpreted in the light of clinical experience. Damage to the nervous system, defective vision and hearing, paralyse, toxæmia, meningitis, or encephalitis may alter the whole basis of feeling and willing. The fact is that E.Q. and I.Q. and the statistical correlation of data are insufficient and unreliable of themselves. There is a vast range of innate individual differences, and full allowance must be made for this fact. It is the total personality which must be assessed, and it is the wise practice of the London medical staff which has yielded their standard results.

Practical Results.

210. The reports of the School Medical Officers for 1922 record 29,250 mentally deficient children of school age. In London, where the system of diagnostic examination is particularly good, there are 12 educable mentally defective children in every 1,000 in average attendance, and this corresponds with the findings in a number of representative areas. If this percentage be applied all over the country we get upwards of 50,000 mentally defective children. Hence, there is either inadequate or unequal ascertainment (which yields say 30,000), or there are wide differences of incidence. It should be clearly understood that *ascertainment* means the certification of all mentally defective children and not only of those for whom accommodation is or can be provided. In any case, there are not less than 30,000 feeble-minded children of school age, and the accommodation in the special schools for such children does not exceed 16,200 places.

211. What are the practical results of the educational training of these children? The after-careers of 2,313 children formerly attending the special mentally defective schools in London, as traced by the London Association for the Care of the Mentally Defective, seem to suggest that, after making allowance for deaths and ineducable children, there were 1,706, or 73 per cent., in employment, or "judged to be employable." This is a high figure, and includes 237 children in "blind alley or other precarious occupations," and 478 "employable" but out of work "owing to industrial crisis." The Special Schools After-care sub-Committee at *Birmingham* (established 1901) keeps records of the subsequent history of the mentally defective pupils, and, out of 2,933 cases, reports 878, or 35 per cent., as "doing remunerative work" in very diverse occupations. This figure excludes 638 living at home and "doing no paid work." The average wages earned are 21s. 3d. per

week; 568 males are earning from 5s. to 60s. per week (average 22s. 3d.), and 310 females 7s. to 30s. (average 19s. 4d.). The first ten years (1903-1912) of the valuable records of this Committee show that 22·4 per cent. were doing remunerative work, which rises in the second ten years (1912-1922) to 42·0 per cent., a very encouraging record.

212. The fact that in *Birmingham* one-third of these children can do remunerative work is attributable to the training, manual, mental and moral, obtained in the schools. The other two-thirds, unable to do such work outside the home, have also "become much more helpful and better able to fend for themselves," and "many of them will in fact obtain employment." The schools are also valuable as centres for observation, study and vocational selection. "The wage-earning capacity is not after all," the Committee quite properly say, "the only measure of a man, and that the Special Schools can give to their pupils sufficient knowledge and self-control to take their place to some extent as self-respecting members of the community, is in itself no mean achievement."

What is the Duty of the Education Authority?

213. I must now turn to answer an important and executive question: What is the duty of the Local Education Authority in regard to these children? As I have pointed out, the problem of the mentally defective child is not merely a domestic problem for Local Education Authorities and the Board of Education. It is of the very essence of the question that the action taken by these bodies within their own sphere of responsibility has important relations to the larger national problem of the adult defective. The foundation has to be laid by Local Education Authorities and the Board; the superstructure added by the Local and Central Authorities under the Mental Deficiency Act, 1913. If the foundation is not laid, the rest of the building cannot be constructed. The general effect of the Mental Deficiency Act is to lay upon Local Education Authorities the duty of sorting out the defective child and of notifying to the Local Control Authority under that Act all children between seven and sixteen who are ineducable and fail to reach a certain mental standard, or who require custody and guardianship. The formalities of notification are simple and the child who needs protection receives it before any harm is done. If, however, the child reaches the age of sixteen without being notified a wholly different position arises. Idiots and imbeciles of any age, and feeble-minded persons between sixteen and twenty-one, can be placed in an institution or under guardianship by their parents. But other defectives cannot, generally speaking, be placed under restraint unless they are abandoned, cruelly treated, or adopt criminal or immoral ways. It follows that much of the trouble and misery suffered by, and caused by, adult defectives is due to the inaction of Local Education Authorities in regard to mentally defective children. For instance, the mentally defective girl who requires control for her own protection or the protection of others, but who is not notified as a child to the Local Control Authority, may be next heard of giving birth to illegitimate children in the workhouse; the boy becomes a social pest till he may be prosecuted for indecent assaults on children. Much of this injury to the community is due to the fact that Local Education Authorities do not appear yet to have realized the importance of this side of their work.

214. There are two Acts of Parliament which affect mentally defective children, the Mental Deficiency Act, 1913, which deals with adults as well as children, and the Education Act, 1921, Part V, which incorporates the Defective Children Acts of 1899 and 1914. According to the *Education Act, 1921*, Section 55 (1) a mentally defective child is one who, not being an imbecile, and not being merely dull and backward, is defective, that is to say, is by reason of mental defect incapable of receiving *proper benefit* from the instruction in the ordinary Public Elementary School, but is not incapable by reason of that defect of receiving *benefit* from instruction in such special schools or classes as, under Part V of the Act, may be provided for defective children. The *Mental Deficiency Act*, Section 1, gives a similar definition (similar in the sense that it has an education basis) though not an identical one. It divides all mentally defective persons into four categories: idiots, imbeciles, feeble-minded and moral imbeciles. The Act requires the Local Education Authority to notify all idiot and imbecile children to the Local Control Authority under the Act; these children therefore are removed from the purview of the Local Education Authority. Feeble-minded children are defined as those in whose case there exists from birth or from an early age mental defectiveness not amounting to imbecility, yet so pronounced that by reason of such defectiveness they appear to be permanently incapable of receiving proper benefit from the instruction in ordinary schools. The fourth class, the moral imbecile, is a small and special class which need not now be considered.

215. It is the duty of the Local Education Authority to make arrangements for "ascertaining" what children in their area are defective within the meaning of the Acts, and which of such children are incapable by reason of mental defect of receiving benefit from instruction in Special Schools or classes. They do this by means of certificates from duly qualified medical practitioners, who in practice are always either the School Medical Officer or one of his staff. While, however, the first ascertainment of the child rests with the Authority, the Board possess powers to check the Authority's diagnosis.

Having "ascertained" all the defective children in the area, the Authority have to deal with them as follows:—Idiots and imbeciles as already stated are to be handed over to the Local Control Authority under the Mental Deficiency Act; the "feeble-minded" children are divided into two classes, those who are, and those who are not, capable of receiving benefit in a Special School. Those who are not so capable ("low-grade"), are handed over forthwith to the Local Control Authority, provided the Board of Education consent; those who are so capable, remain within the sphere of the Local Education Authority who are responsible for supervising and educating them. There are a few exceptional cases, which do not invalidate this rule.

216. It will be noticed that every child with any form of mental defect falls automatically within the province of the Local Education Authority in the first instance. It cannot come under any other jurisdiction until the Education Authority have taken the approved steps to put it under such jurisdiction. The thorough and efficient performance therefore of the duties of Local Education Authorities is the basis of the work of the statutory committees under the Mental Deficiency Act.

217. Now here we meet with some practical difficulties. First, we have no fixed and final medical basis for "ascertainment." We are only now beginning to apply reliable tests for diagnosis, and these are being perfected by halting stages, both in Europe and America. Much patient observation is still necessary before we can reach a standard which will give us unvarying and trustworthy returns of the exact number of mentally defective children. Secondly, there is no definition in these Acts as to the meaning of the words "proper benefit," nor is there any counsel or prescription as to the kind of education which the Authority must provide for these children. The fact is that at present nobody knows of any such standard. We can only experiment and try, and learn from experience. What is good and effective for one child may be unprofitable for the next. We must adopt the advice of John Hunter, the great surgeon of the eighteenth century: "Don't think, try," and we must scientifically weigh and measure the results and thus learn what "proper benefit" can be made to mean. Thirdly, until we are sure of what our educational practice shall be we cannot standardize our Special Schools. Great development has taken place since the School Medical Service was established, and new knowledge is being rapidly acquired by the special workers in Mental Deficiency, but we have not yet arrived at final decisions. The education of the normal child is indeed in some flux, and this is still more the case with the abnormal. Hence the term "Special School" has a variable connotation, and its results do not give confidence to Education Authorities who are unfamiliar with the subject. Lastly, there is finance. At present Day Special Schools cost £30 a head, and Residential Schools £90, which seem prohibitive in comparison with £12 a head for the Elementary School, and, in any case, is prejudicial to their establishment or development.

218. It is evident that we still remain in a transition period. Owing to the skill of many experts, to the patience and devotion of many workers on After-Care Committees, and to the public spirit of the more enlightened Authorities, substantial progress is being made. What is needed is that *all* Education Authorities should recognise their responsibility in this matter and, co-operating together, do the best that is immediately practicable, pending firmer knowledge and better times as regards finance. I venture to make the following recommendations:—

(a) Every School Medical Officer should *ascertain* the total number of mentally defective children in his area, and differentiate backwardness from specific defect, and such defect from idiocy, imbecility or delinquency.*

(b) On the medical ascertainment the Authority should, as far as practicable, "clear" its cases, the definitely educable defective to the Special Schools, the definitely ineducable mental case to the Local Control Authority.

* *Delinquency* in relation to mental defect has been investigated by Dr. Hughes of Stoke-on-Trent, and by Dr. Shrubsall and Dr. Williams, of the London County Council. Delinquents, though generally retarded by one or two years, appear to show a slightly greater average intelligence than Special School children. Emotional instability and home and school irritation are potent causes of delinquency.

(c) A large indefinite group will remain (with some of the definite group for whom no Special School accommodation is available). These children should be kept under exact and suitable *supervision* (as is now done in Staffordshire and a number of other areas), and the following possibilities considered by the Authority for their care :—

(i) Notification to Local Control Authority in exceptional circumstances.

(ii) Training in Occupation Centres under the Board of Control (as in Surrey and elsewhere).

(iii) Training of high grade cases in special classes with dull and backward children.

(iv) Devising a simpler and cheaper form of Special School or class than those now established.

XI.

PROVISION OF SCHOOL MEALS.

219. Local Education Authorities were empowered under the Education (Provision of Meals) Act, 1906 to spend money from the rates upon the provision of meals for school children. They were required to make a charge to the parent of each child receiving such meals, unless necessitous, the amount being determined by the Authority. The scope of the Act was enlarged in 1914 by a further Act which enabled Authorities to provide meals during holidays and on other days when the schools are not open.

220. An indication of the extent to which the Acts have been put into operation in the year preceding, and the years subsequent to the War is obtained from a consideration of the figures given in the following table :—

TABLE I.

Year.	Number of Authorities which provided meals under the Act.	Total Number of Children fed in the Year.	Total Number of Meals supplied in the Year.	Average Total Cost per Meal in Pence.
				<i>d.</i>
1913-4	98	156,531	14,525,593	2·43
1914-5	134	422,401	29,560,316	2·47
1915-6	116	118,114	9,957,634	4·1
1916-7	94	65,301	5,777,147	5·42
1917-8	88	60,633	6,518,174	5·26
1918-9	86	53,742	5,647,954	5·98
1919-20	118	75,013	6,335,821	6·99
1920-1	137	148,082	10,447,596	6·68
1921-2	190	592,518	60,676,017	3·88
1922-3	155	149,586	17,161,690	†

TABLE II.

Year.	Average Cost per Meal for Food only.	Gross Expenditure.			Amount received from Parents.	Miscellaneous Receipts.
		On Food.	Other.	Total.		
	<i>d.</i>	£	£	£	£	£
1913-4	1·16	69,959	77,559	147,519	2,997	1,665
1914-5	1·51	186,363	118,220	304,583	4,225	2,120
1915-6	2·6*	107,907	62,287	170,194	11,324	1,995
1916-7	3·33*	80,135	50,480	130,615	13,862	1,948
1917-8	3·31*	89,948	52,886	142,835	18,202	2,262
1918-9	3·73*	85,275	51,796	137,071	21,902	3,572
1919-20	4·15*	109,486	75,028	184,516	25,612	5,038
1920-1	4·23	184,292	106,468	290,760	28,695	10,314
1921-2	3·22	814,620	168,562	983,182	15,822	21,733
1922-3	†	†	†	†	†	†

* Some of this increase is due to inclusion of expenses of preparation and service in London.

† Complete information not yet available.

Further statistical information regarding this service is given in Appendix D.

221. Many of the School Medical Officers make special report on the action taken by their Authorities for providing school meals or school canteens, and a number of different methods are being practised and dietaries used. In London, an average of 25,000 milk meals were given each week to necessitous children; in Kent, 27 school canteens have been established in the county area.

222. In view of the greatly increased expenditure in 1921-22 on the provision of meals to children in attendance at Public Elementary Schools, the Government decided that it was impossible to acquiesce in a continuance of the arrangements, under which, in abnormal periods, a considerable part of the burden of poor relief may be thrown upon the Education rate and the Vote of the Board of Education. The Government accordingly decided that the total expenditure of Local Educational Authorities on the provision of school meals during 1922-23 which the Board would recognise for the calculation of grant would be limited to £300,000. In consequence of this decision the Board rationed the Local Education Authorities in the light of the circumstances obtaining in the areas in previous years, and according to the latest estimates received from the Authorities of their expenditure on this service for the year ending 31st March, 1923, it would appear that their total expenditure will not exceed £300,000. The total expenditure which the Board will recognise for grant during the financial year 1923-24 will again be limited to the sum of £300,000.

223. In the circular letter of the 17th May, 1922 (Circular 1261), the Board pointed out that arrangements should be adopted for co-operation with other local bodies concerned with measures of relief, especially with the Guardians of the Poor. In cases where the Guardians are the proper body to pay for the meals, it will generally be preferable that the meals themselves shall be provided by the Authority in return for a payment by the Guardians. Such an arrangement which secures that the child actually receives a cheap and wholesome meal is very desirable and is quite feasible under a wise system of co-operation. Authorities should confine themselves strictly to providing meals on the lines indicated in the Acts leaving to other bodies the relief of temporary or chronic destitution.

224. An interesting practical experiment as to the value of supplementing a school child's dietary was made in 1922-23 at *Birmingham*.

The Education Committee accepted the offer of the National Milk Publicity Council to supply one pint of milk daily for a period of four months to 30 (15 boys, 15 girls) poorly nourished children in one of the public elementary schools of the City. The object of the experiment was to produce evidence of the physiological value of milk as an article of diet, and particularly to discover what effect was produced on children suffering from malnutrition by the addition to their dietary of one pint of milk daily. Through the generosity of a Birmingham firm, each child received a biscuit to accompany the milk. Thirty normal children were similarly fed as "controls."

For the purpose of the experiment it was necessary that the children chosen should be, as far as possible, those suffering from malnutrition alone, and not the subjects of any active disease. The head teachers were asked to choose about twenty children each from those of their scholars who seemed to be poorly-nourished, and a final selection was made of

fifteen boys and fifteen girls who showed the greatest deficiency in weight combined with a low percentage of hæmoglobin in the blood. The following table shows the condition at the end of the first two months, and at the conclusion of the experiment, and also one month after the milk supply had ceased. The "poorly-nourished" children are those who were the recipients of the milk throughout the experiment. The "controls" are those who received the milk during the last two months only.

	Average increase in weight.		
	At the end of the first two months.	During the third and fourth month.	Average loss in weight one month after stopping milk.
Boys (poorly nourished) ...	1·26 lbs.	1·13 lbs.	0·22 lbs.
Boys (controls)	0·28 lbs.	1·83 lbs.	0·09 lbs.
Girls (poorly nourished) ...	2·53 lbs.	0·98 lbs.	0·18 lbs.
Girls (controls)	1·76 lbs.	1·16 lbs.	0·09 lbs.

In view of the limited time covered by the experiment, the Committee have not expressed any definite opinion as to its results, but the following are the conclusions which, in the opinion of the School Medical Officer, may be drawn therefrom :—

- (1) A notable improvement in mental and bodily vigour and alertness.
- (2) Improvement in the hæmoglobin content of the blood.
- (3) Improvement in rate of increase in weight and nutrition as calculated by different methods of investigation.

Nutritional Conditions.

225. The purpose of the provision of school meals is medical and educational. It was not intended to be a form of poor relief. From the medical point of view we have to consider it as a means of nutrition and the building-up of a strong physique. The nutritional condition of the school child has assumed importance of unusual magnitude in relation to the succession of fundamental changes which have invaded the normal national social life in the past nine years. From the inception of medical inspection in 1908 until 1914 no serious disturbance occurred in the conditions of living which could in the ordinary course have produced any material changes in the national physique as observed among school children. Then came the Great War with four years of stress and anxiety to every individual in the realm—anxiety reflected in the nervous condition of the school child—with the accompaniment of high and steady wages on the one hand and a scheme of food rationing on the other. The close of the war in 1918 was followed by two years of apparently abounding prosperity. The middle of 1920 saw the termination of this phase, with the immediate onset of a period of exceptional unemployment and distress, perhaps worse than anything in our experience since we became a great industrial community. Concurrently with this came a period of financial tension and necessary economy.

226. We are bound to ask ourselves how these sudden and profound changes in the national fortunes have affected the health of the school child, and for this purpose no better index can be selected than his nutritional condition. Such an inquiry has no idle purpose. The public medical services charged with the care of the child have a duty of observation in such matters, and should seek to secure the children of the nation, as far as practicable, against temporary or permanent detriment of their physical powers. It is manifestly of importance that even in the hardest times, the children shall be equipped in body and in mind for the duties which will fall to them as the men and women of the future. It will be convenient perhaps if this subject is considered in the form of answers to the following four questions :—

(i) Is it a fact that children of school age improved in nutritional condition during the war?

(ii) Are the children better or worse off in nutritional condition at the present time than before the war?

(iii) To what extent, if any, has unemployment and distress affected the general health of the children?

(iv) Have the children suffered physically to any extent during the past year as a result of the economical measures connected with the provision of school meals?

It would be no easy matter to give an accurate answer to any or all of these questions even if we were in possession of statistical standards for measuring the data upon which a pronouncement could be made, and the matter becomes more difficult in view of the variation of standard observed from one area to another. There is no means by which a uniform standard can be imposed by law or regulation upon all Authorities or persons concerned. Hence, it is frankly not possible to furnish a reply including standards of examination or indeed statistical returns derived from medical examinations, though the opinions here expressed were based upon a large body of local facts and figures. Nevertheless, as a result of careful inquiry in all parts of the country, we have a good deal of information based upon the personal experience of those who come into daily contact with children and parents—especially School Medical Officers, of such a character as to make it possible to arrive at a practical opinion in regard to the present nutritional condition of the school child.

(i) *Conditions during the War.*

227. With few exceptions there is a clear statement on the part of School Medical Officers that conditions obtaining during the war resulted in substantial improvement in the physique of the children. Definite information comes to this effect from such important centres as *London, Birmingham, Bradford, Sheffield, Swansea, Newcastle-on-Tyne* and the County of *Cornwall*. Dr. Buchan (*Bradford*) takes the view generally adopted in the country as a whole :—

“ In Bradford the impression that the regular wages received during the war resulted in a marked improvement in the physique of school-children is fairly generally held both by school teachers and the medical profession—official and non-official. . . . During the past 12 or 13 years there has been, without doubt, a marked improvement in the health of school-children. I rather think this marked improvement is the general result of the efforts of the School Medical Service not so much as the result of the actual work of inspection done, or the treatment

afforded, or of the meals given, but more as the result of the general education and enlightenment of teachers and especially of parents, which has of necessity followed the institution of the School Medical Service."

On the other hand Dr. Newsholme (*North Riding*) states that—

"the records of heights and weights, the results of medical inspection and the opinions of responsible teachers do not bear out the general opinion that better wages during the war improved the nutrition of the children, on the contrary, there was a definite increase in both slight and grave degrees of malnutrition of children during the earlier years of the war (1914-1917) as compared with later years, the increase affecting both the Cleveland industrial area and the largely rural remainder of the Riding, but involving the former more markedly than the latter."

In *Lancashire*, Dr. Butterworth points out that nutrition reached its highest point in the period of good employment following the war.

(ii) *Present Conditions compared with the Pre-War Period.*

228. The broad conclusion at which School Medical Officers arrive on this point is that the general health and physique of school children is at least as good now as it was before the war.

Sir William Hamer (*London*) concludes without a doubt—

"that the condition of children is better now than it was immediately before the war. There was during the war a great improvement in the nutrition of school-children, but subsequently there were signs of falling off from the high point reached. The 'middle group' of children with average nutrition increased at the expense of the 'excellent group.' As the result of concentration of effort upon the 'under-nourished' group, the figures show that this group is also being reduced so that the middle group was increased at the expense of the two outer groups—that is to say—while the extremes of good and bad nutrition have diminished the broad middle group of average well-fed children has increased—a feature upon which London has much cause for satisfaction."

Dr. Auden (*Birmingham*) states that part at least of the war time improvement has been maintained throughout post-war years. The prolonged period of industrial depression is not believed to have had any marked effect on the physique of children.

Dr. Warner (*Leicester*) agrees with the view of the majority.

"Broadly speaking, in my opinion," he says, "the general health of the children is better to-day than it was just before the war. The figures (i.e., weight) for 1921 and 1922 are considerably higher than in 1913 and 1914."

Dr. Jenkins (*Rhondda*) reports that—

"the children's physical condition, *per se*, since the war has been maintained from 1919 onwards with the important exception of a lapse in 1922 as compared with 1921. As regards the comparison between the conditions in 1922 and 1921, it is generally agreed that the children's physical state was better during and immediately after the strike period than it has been observed to be before or since, the regular and general feeding having seemed to improve the condition of the comparatively small proportion consisting of those who were hitherto insufficiently or injudiciously fed."

Dr. Newsholme (*North Riding*) again views the situation less favourably than his colleagues.

"From 1914 onwards there has been consistently more serious and more slight malnutrition in Cleveland than in the rest of the Riding. The malnutrition has affected the older children (leavers) more markedly than the entrants . . . It seems clear, in regard to nutrition, that children are in a more critical position in Cleveland than elsewhere in the Riding, and it would appear that while the young child has been safeguarded particularly during the stress of the past few years, the older child has not been so fortunately placed."

Again,

"There has been a decided set-back," says Dr. Chetwood of *Sheffield*, "during the last 2 or 3 years in the well-being of the children as compared with the war period."

(iii) *The Effect of Unemployment and Financial Depression.*

229. With a few important exceptions the general view formed by School Medical Officers is that the depression of 1921 and 1922 has not resulted in any substantial depreciation of the physical condition of school children. Dr. Newsholme (*North Riding*) would, from his own observations, support the view "deduced from records that the children in Cleveland have suffered to some extent in nutrition and that this is most evident in the older children. There was no increase in malnutrition in 1921 but a definite increase in slight malnutrition in 1922." Dr. Clayton (*Gateshead*) reviews the present condition in the following terms:—"Unemployment followed by the deprivation of food, scanty clothing, bad footgear, and the loss of heart to struggle against adversity by otherwise stable parents, has reflected its imagery on the children now showing in many instances impoverished bodies and slow mentality. This conclusion is not imaginary, the number of children I have seen stamp it on my mind as real." In *Sunderland*, also, whilst the entrants in 1922 compare favourably with those of 1913, Dr. Allan finds the leavers of 1922 at a disadvantage. Dr. Donald (Assistant School Medical Officer, *Durham*) states—

"as a result of unemployment of parents, there has been a lowering of the standard of general physique among the children, especially between the ages of 8 and 14. There is more general debility, an increase in the number of cases of anæmia, and a marked increase in the number of cases of bronchial trouble—the latter presumably attributable to bad footgear and lowered resistance. As regards the effect of recent industrial conditions on the well-being of children, there is already evidence in the area of untoward effects from unemployment and low wages—by evidence of lowered physique in all ages of school children, and by the failure of parents to respond to suggestions made to them to procure treatment for defects found at medical inspection."

And he adds:—

"I am strongly of the belief that the effects of the present industrial crisis will be manifested to a much greater extent in future years."

230. On the other hand there is ample and encouraging evidence of contrary tendency. Dr. Clark (*Cornwall*) states "in the districts where there is considerable unemployment, we are providing school dinners—the standards in those districts have not only been maintained generally, but rather improved." Dr. Hauxwell (*St. Helens*) from his own observations and those of his medical and nursing assistants and

of the head teachers consulted, has formed the opinion that children are not at present suffering physically owing to unemployment, and this notwithstanding an all-round falling off in the quality of clothing and footgear. Dr. Evans (*Swansea*) says that "the provision of meals during the acute stage of unemployment served to withstand a decided set-back in malnutrition and our general opinion is that on the whole nutrition has not suffered to the extent that might have been anticipated." Dr. Foggin (*Newcastle-on-Tyne*):—"I cannot find any evidence that there has been any set-back during the last 2 or 3 years which have been associated with such wide-spread unemployment." Dr. Buchan (*Bradford*) observes "during the years 1919-22, despite variation in unemployment, the health of the children has considerably improved." Dr. Butterworth (*Lancs.*) states: "with regard to the prolonged period of unemployment through which the country has just passed, it is interesting to note that the opinion (of the medical staff) is almost unanimous that there is practically no increase of the gross forms of malnutrition as compared with the pre-war period." The School Medical Officers of *Kingston-upon-Hull* and *Eccles* favour a similar view.

231. Naturally, Medical Officers cannot gauge the future effect of present unemployment and warnings come from areas of such diverse conditions as *Norfolk*, *Dorset*, *Cambridgeshire*, *Wiltshire*, *Workington*, and *Whitehaven* as to ultimate conditions.

(iv) *The Effect of Economical Restriction of the Provision of Meals.*

232. The general opinion is that the restriction in the provision of meals necessitated by financial conditions has not, up to the present, been signalised by any deterioration of physique.

The medical officers of many large representative areas take this view. Dr. Auden (*Birmingham*) states that "there has been no noticeable deleterious effect upon any section of the child population as the result of the diminution of meals provided by the Education Committee during the year." Dr. Warner (*Leicester*) says that fewer meals have been provided in 1922 than in 1921, but, he adds, "I am of opinion that this has not had a harmful effect upon the children." Similarly, Dr. Wear (*Leeds*) does not think that the smaller number of meals has had any deleterious effect upon the children. Reports from London, Swansea, Birmingham, Sheffield and Merthyr Tydfil convey a similar view.

233. A contrary view is taken by the School Medical Officer for *Workington*, Dr. Macpherson. He points out that it is quite noticeable that many children who were fed at the canteen were looking well, but later, when withdrawn from the canteen, they suffered "in appearance and general physique, and are now showing a half-starved condition."

Summary.

234. The position may be briefly summarised as follows: During the period of the Great War the physical condition of school children in the country as a whole improved in definite degree in comparison with the conditions obtaining in the preceding period. The ameliorative process continued beyond the Armistice for a year or two, and up to the present

much of the improvement secured has remained. The advance in physical welfare is attributable to many causes, of which improved feeding is only one. Another contributing cause was the high and steady wages, which enabled parents to do better by their children, not only as regards food, but equally as regards clothing, footgear and provision of medical treatment. In the last two years of unparalleled conditions of unemployment and financial restriction, including reduced school feeding, health conditions have been fairly maintained, and are even now better than before the war—and this is true of the country generally, despite notable exceptions in certain areas. But we must beware of coming to premature conclusions. These reports can only speak of the immediate, not the ultimate, results.

235. In forming a judgment on this question of Nutrition, it must be borne in mind that there is no fixed scientific standard. Weight, height and other similar measurements are of little avail apart from a continuous anthropometric record.* Nor is a sound nutrition dependent only on food, still less on school feeding supplementary to other dietary. As a matter of fact, however, though the evidence I have quoted itself contains no specific data, it is on the whole as good and reliable evidence as is available. It comes from competent witnesses with a first-hand knowledge of the physical conditions of the school children. Its general trend is not vitiated by variations in a few exceptional areas, where the effects of unemployment have fallen in unusual degree upon the child population.

236. If it be asked why has unemployment not affected the health of children more than appears to be the case, I think the answer is that (a) there has been an increased sense of responsibility among the parents for their children's welfare; (b) there have been forthcoming various monetary aids of the nature of relief, insurance and union payments, and these have in part made up for loss of wage; and (c) there has been the supervision, assistance and nurture of the School Medical Service. Moreover, a glance at the tables at the beginning of this Section shows a very great increase in school feeding in the winter of 1921-22 (about 50 million more meals than in the previous year), and, whilst there has recently been great curtailment, the expenditure and the number of meals have not returned to the minimum of 1918-19. For the sum of £300,000, the rationed figure, a large number of children can, at present food prices, be provided with supplementary food, and it should be recognised that school meals furnish *supplementary* food. If the medical evidence be valid, we cannot, I think, escape the conclusion that a substantial amount of the excessive school feeding undertaken in 1921-22 was not necessary to health or life. Its addition or its subtraction has not apparently exerted any definite or enduring physical effect. There has, in fact, been domestic accommodation to the circumstances.

* See also Bulletin of U.S.A. Public Health Service, January 12th, 1923, pp. 39-58.

XII.

PHYSICAL EFFICIENCY AND JUVENILE EMPLOYMENT.

237. One of the purposes of the School Medical Service is to fit the child physically for industry and protect it from premature employment which would be harmful. I have presented for twelve years in these Annual Reports a record of the work done in these directions with various recommendations for reform. The contribution towards such reform made by the School Medical Service throughout the country has been substantial and encouraging. In 1908 many thousands of school children were employed on half-time work and their education was sacrificed; many others were employed for long hours before and after school hours; not a few were engaged in street trading and injurious occupations. The Employment of Children Act, 1903, and the Education (Choice of Employment) Act of 1910, had made for progress, though the old worn-out objections of the employers of 100 years ago who were advocates of child labour, still had to be met. The employment of children they said, was easy and light and had obvious educational advantages, it was also popular with the children and their parents; the alleged abuses did not exist or were exaggerated; if they did exist, they were necessary evils inseparable from industrial progress; and lastly, if child labour was abolished greater evils would arise. *But the facts have been against them.* There is now a century of proof. Nor must we forget that there are differences between 1816-1842 and to-day. There are more children to-day, the cruelties of the early industrial system affected only a fraction of those affected now, the standard of comfort and of education is higher, the knowledge of science and the effect of long hours and premature labour is more exact and convincing, the expectation of life is longer and its demands greater. The responsibilities of citizenship have expanded, human values have risen and the personality and "group-mind" of the workers is becoming the dominant factor in industry. All this means that, if we desire to secure maximum capacity and productive output, we have got to bring science and humanitarianism to bear upon the needs and aspirations of the young worker.

First, let me summarize the present position, and the work which is being done, and then refer to the requirements of the future.

The Present Scheme for Protecting Health.

238. The general position to-day with regard to the employment of children, consequent on the several Acts which have secured step by step the safety of the children and which culminated in the Education Act of 1921, may be stated as follows:—

(a) No child under the age of twelve years may be employed for gain.

(b) A child between the age of twelve and fourteen years may, on any day in which he is required to attend school, be employed after school hours till not later than 8 p.m. Local by-laws may also allow one hour's employment after 6 and before 9 in the morning; but, if this is allowed, afternoon employment is limited to one hour. Sunday employment is limited to two hours, and by-laws also govern the employment of children by their parents.

(c) No child under the age of fourteen years may be engaged in any industrial undertaking, or in any factory or workshop to which the Factory and Workshop Acts, 1901 to 1911 apply, or in any mine to which the Coal Mines Act, 1911, applies, or in any mine or quarry to which the Metalliferous Mines Acts, 1872 and 1875, apply.

(d) A child under the age of fourteen years shall not be employed (i) in street trading; (ii) to lift, carry, or move anything so heavy as to be likely to cause injury to the child; (iii) in any occupation likely to be injurious to his life, limb, health, or education, regard being had to his physical condition.

(e) Local Education Authorities may prohibit any child under fourteen from being engaged in any employment if such employment is prejudicial to his health or physical development, or attach such conditions as they think fit to his employment in that or any other manner.

(f) Local Education Authorities may make by-laws prescribing as respects all occupations or specified occupations the age below which employment is illegal, the hours between which employment is illegal, and the maximum number of hours of employment, and prohibiting absolutely, or subject to conditions, the employment of children in specified occupations.

239. In order to carry out these statutory requirements of the Education Act, 1921, the Local Authorities have made by-laws and designed arrangements for the effective medical supervision of children, in order to avoid the evils of premature employment. The Home Office suggested a Code of model conditions for the construction of by-laws, and 110 Authorities have adopted the substance of this Code. Of the 317 Local Education Authorities 297 have made by-laws.* That is the fruit of the various recent reforms, and the situation thus created provides for the first time in our national history a fair chance for the young worker. What is being done under these enactments?

(i) First, the physical condition of the school child who is employed out of school hours is kept under medical supervision.

(ii) Secondly, the leaving child is advised against improper or unsuitable employment and is prepared for industry.

Children Employed out of School Hours.

240. The Board of Education have recently addressed a questionnaire to the School Medical Officers of a number of Education Authorities in regard to the medical inspection and treatment of children employed out of school hours (under the by-laws made under the Education Act, 1921), with particular reference to the effect of this employment on their health, either generally or in respect of particular types of employment, and the steps taken by Authorities, acting on the advice of the School Medical Officer, to prevent harmful results of employment. The answers were as follows:—

(1) *Through what Channels are Children Employed out of School Hours Referred for Medical Inspection?*—The answers to this question show that children are referred through various channels—the Director

* See also Home Office Report on the work of the Children's Branch, 1923, pp. 72-82.

of Education, the School Attendance Officer, the Juvenile Employment Committee, or a Special Officer appointed under the by-laws. In London a form of application for employment, filled up by the employer, is submitted to the Divisional Medical Officer by the Head Teacher of the school attended by the child. The Divisional Medical Officer arranges for medical inspection and issues a certificate in suitable cases, which is sent with the forms to the Divisional Superintendent of the Attendance Department, who makes out a licence for the child.

Two Authorities, *Bristol* and *Cardiff*, stated that the by-laws make no provision at present for the medical inspection of these children.

(2) *Are all Employed Children so Referred for Medical Examination?*—With the exception of the two areas referred to above, the by-laws appear generally to provide that a certificate for employment shall not be granted unless the School Medical Officer has issued a certificate as to physical fitness for employment. In *Liverpool*, however, only those children employed *before* school hours are referred for examination before being granted an employment certificate, but *all* employed children are brought before the School Medical Officer by the teachers periodically during ordinary medical inspection at the school. In *Sheffield* also only those children employed before school hours are referred to the School Medical Officer through the School Attendance Department.

(3) *At what Intervals are Children Inspected and Re-inspected?*—The replies under this heading show some variety. In *Liverpool* the children are inspected at approximately six monthly intervals. In *Rotherham* the children are re-inspected twelve months after the original inspection. In *London* no provision is made for routine re-inspection, but conditions may be attached to the licence requiring re-inspection at appropriate intervals suggested by the Medical Officer in each particular case. At *Bolton* children employed in Entertainments are re-inspected at intervals of six months, other children being sent by the Supervising Officer, who is extremely careful in the oversight of these children. At *Portsmouth*, for Theatrical licences, children are inspected every three months, otherwise there is no re-inspection unless there is a change of employment. In several areas re-inspections take place as part of the ordinary routine medical inspection of the schools. At *Stoke-on-Trent* children who are found to be defective are placed on observation lists and re-examined as often as the Medical Officer considers desirable.

(4) *What are, generally speaking, the Findings of Medical Inspection of these Children?*—In *Leeds*, out of 357 employment cases examined, 29 were reported on as "excellent," 148 "normal," and 180 as having some defect. There were 141 cases of flatfoot, 32 were found anæmic, 21 to have defective vision, 13 subnormal nutrition, and 10 heart affection; 17 other defects were found.

In *Rotherham* about 5 per cent. of children were refused employment certificates on account of some disability, either temporary or permanent.

In *Bolton*, during 1922, 95 children were examined; 3 were temporarily unfit, and 7 certificates were refused. For entertainment purposes a troupe of 22 children were examined; 4 were temporarily unfit and one licence was refused.

In *East Ham* the defects discovered corresponded with those found at the ordinary routine medical examination.

In *Sheffield* 3 per cent. were held over until medical advice or treatment had been obtained, and 5 per cent. refused permission to work.

In *West Ham*, during 1922, 386 applications were made and 374 medical certificates were granted, one provisionally.

In *Liverpool*, out of 1,351 children specially examined, in only 5 cases were the certificates refused.

In *Stoke-on-Trent*, out of 114 children, one was found to be invalid and unemployable, and 8 showed defects barring them from certain forms of employment.

(5) *What Provision is made for Remedying Defects and with what Results?*—In *London*, in 1922, certificates were issued in 158 cases conditionally upon the rectification of defects. Treatment was carried out in all these cases under the ordinary provisions.

In most of the other areas the school clinics and the ordinary provisions of the School Medical Service are available for treatment of defects.

Dr. Turner, of *Rotherham*, states that when a certificate is withheld until a defect is remedied the child is warned that the parents and employer will be liable to prosecution if he is employed without such a certificate. The defect is invariably promptly remedied.

Dr. Benton, of *East Ham*, states that the results are encouraging. The fact that children are not certified as fit for employment until defects have been remedied appears to act as an incentive for treatment to be procured forthwith.

(6) *Is there any evidence of health deterioration as the result of work out of school hours, (a) generally, (b) in respect of particular types of employment? If so—*

(7) *What steps are taken by the Local Education Authority, acting on your medical advice, to prevent harmful results of employment?—*

Sir William Hamer (*London*):—

“No child is allowed to be employed unless his physique is equal to carrying out the employment. The restrictions on the employment of children out of school hours are such that there is no likelihood of a child of good physique being injured by such employment. No such case has been reported to me since the institution of the by-laws. The licence which is issued by the Attendance Department contains any condition as to physical attention as is prescribed by the School Doctor.”

Dr. Hope (*Liverpool*):—

“The School Medical Officers have not noticed any such deterioration as a result of work out of school hours, either generally or in respect of any particular types of employment. During 1922 in only one case was it found necessary to withdraw the certificate on account of health reasons. On the whole the by-laws have so regulated employment that no deleterious results are likely to follow in the case of healthy children.”

Dr. Hughes (*Stoke-on-Trent*) :—

“ The Employment by-laws have practically abolished a great evil here. Prior to the passing of these by-laws complaints were constantly being received from teachers that children came to school in the morning tired out and were consequently quite unable to profit from the education provided. Since the passing of the by-laws no harmful results have been observed.”

Dr. Wear (*Leeds*) :—

“ Enquiry was made at the end of 1922 from the teachers of the Elementary Schools as to whether they had discovered any ill effects arising from the employment of any of their pupils out of school hours, and, with few exceptions, the teachers reported that the attendance, punctuality, general alertness and quality of work of these children had in no way suffered. The School Medical Officer keeps under careful observation children who seem to be somewhat affected by their employment. The suggested employment is notified to the Medical Officer at the time of the medical examination and if he considers it unsuitable the certificate is withheld and the officer informed of the Doctor's recommendation.”

Dr. Turner (*Rotherham*) reports that no evidence of health deterioration has been observed in Rotherham, but, whilst acting as Assistant School Medical Officer in another area, he obtained fairly definite evidence that the delivery of coal in small quantities (one or two cwts.) was causing spinal curvature (scoliosis or kyphosis, or both). In consequence, the Local Education Authority declined to sanction the employment of school children in this occupation.

Dr. Chetwood (*Sheffield*) says that two or three cases had been reported to the School Medical Officer, and more than once the employment of a child in unsuitable employment has been prohibited.

Dr. Moffat (*Bolton*) states that the by-laws of the Local Education Authority provide that “ every person (so) employing a child out of doors shall see that such child is provided during the course of such employment with efficient waterproof footwear and a sufficient waterproof garment to protect the child from injury to health from inclement weather.” Some such paragraph as this appears in the by-laws of other Authorities, of which copies have reached the Board.

Summary.

241. These returns are interesting and valuable. They indicate the removal of some abuses and disabilities inseparable from uncontrolled child employment out of school hours. The new by-laws regulating such employment, and the medical inspection and treatment incidental to their administration, have proved effective :—

(a) in stopping certain employments which are objectionable and unsuitable for children (in barbers' shops, public houses, refreshment room kitchens, slaughter-houses, etc.) ;

(b) in controlling and supervising the employments permitted and the hours of employment, and bringing back the children periodically for re-inspection and re-consideration ; 214 Authorities have made by-laws permitting employment before school (delivery of newspapers and milk, domestic and agricultural work) ; and 269 Authorities have fixed a maximum period of two hours' employment after school, reduced to one hour when the child is employed also before school ;

(c) in preventing health deterioration and fatigue in children employed out of school hours; 217 Authorities require the provision of a medical certificate that the employment will not injure the child's health, 283 have adopted some system of registration, and 165 have placed on the employer the responsibility of providing or ensuring that children have waterproof garments and footwear;

(d) in securing prompt treatment of defects in children seeking such employment;

(e) in requiring that these partly-employed children attend school in a physical and mental condition to obtain proper benefit from the education provided by the State.

Though gross abuses have disappeared, vigilance is necessary in regard to "the bad small employer," the length of hours of work, evil conditions of labour, and the necessity for vocational standards.

242. Those who have been familiar with the records summarized in my reports for a number of years past will be constrained to agree with Dr. Hughes of *Stoke-on-Trent* that "the employment by-laws have practically abolished a great evil."

Examination and Preparation of the Leaver.

243. Another branch of this work is represented in the medical examination and advice given by the School Medical Officer to the children leaving school and entering upon whole time employment in industry. There is evidence that in many areas he is in close touch with the Juvenile Employment Officer and his Committee on the one hand, and with the Certifying Factory Surgeon on the other. The closer the co-ordination of these officers, the more beneficial and thorough are the activities on behalf of children leaving or about to leave school.

244. At *Swinton and Pendlebury* all children of school leaving age are graded by the School Medical Officer, who is also Factory Surgeon, as to fitness of work before leaving school, and a scheme is in operation whereby any child rejected for work under the Factory Acts is notified to the Juvenile Employment Committee, of which the School Medical Officer is also a member.

245. At *Leicester*, where there is also very close co-operation with the Certifying Factory Surgeons, 972 school children were medically examined with a view to their employment; 942 certificates were given. Of the 30 children refused, 25 were rejected permanently and 5 temporarily. The causes reported by Dr. Warner were as follows:—*Permanent refusals*: heart disease 5, spinal curvature 11, poor physique 4, lupus 1, unsuitability of proposed occupation 4; *Temporary refusals*: scabies 1, discharging ears 1, debility 3. These five got their certificates later.

246. At *Swindon*, Dr. Brewer has established a relatively complete organisation.

"At the end of each term the names of all children about to leave school are submitted to the School Medical Officer who furnishes a report on their physical condition to the Juvenile Employment Committee. Apart from the value of this information to the Advisory Committee, to the employer and the child himself, it is of very great value to the School Medical Department as forming an index of the state of efficiency of

children entering industry, of the value of school medical inspection and treatment, and of the results which have been achieved. During the year 1922, 939 children were passed out of the Elementary Schools. In 38 cases no report was available, but of the 901 children of which we have information, 797 or 88·4 per cent. were efficient; 100 or 11·0 per cent. were partially efficient, and 4 or ·44 per cent. were inefficient. Looking through the records of these children it becomes apparent that this result, which is an extremely favourable one, has been attained by constant supervision and detection and remedying of defects in their early stages.

"In Swindon before a child is taken before the Children's Court, he is examined physically and mentally by the School Medical Officer. Of the 40 children who were dealt with during 1922, 28 were mentally normal; 2 were mentally brilliant, 8 were mentally backward two years or more, and 2 were mentally defective. In addition 2 boys were partially deaf and one was otherwise physically defective. 15 of the boys had left school before they had got into trouble."

247. Dr. Hope reports that in *Liverpool*, after leaving school, a large proportion of the children enter their names with the Juvenile Employment Bureau at the Education Office with a view to securing employment.

He adds that :—

"In connection with the placing of the cases, all the medical records and notes of the School Medical Officers are available for the use of the Juvenile Employment Department and are freely used, whilst occasionally special examinations are made by the Medical Officers at the request of that Department.

"During the year arrangements were made to co-operate somewhat more closely with the Factory Surgeon, particularly with regard to cleansing the heads of employees in factories. Printed instructions, prepared for distribution by the Factory Surgeon in such cases, explain how the cleansing can be effected, and give the employees the option of attending at one of the Cleansing Stations where they can have the free use of the special steel combs recently put on the market. The Factory Surgeon refers these cases to the Medical Officer in order that the Health Visitors may visit and investigate the home conditions. Arrangements have been in existence for some years by which the Factory Surgeon notifies the Education Department, for the information of the Juvenile Employment Bureau, of cases which have been refused certificates for particular employments on medical grounds."

Future Work.

248. A final medical inspection of the leaving child and such treatment as may be necessary is not, however, all that can be done by medicine. It is well also to guard the child and offer advice as to the industries which may be prejudicial or for which the child is not capable or suited. But more than that can be done. Every child, before leaving the Elementary School, should be the subject of mental and physical study to determine if *vocational selection* and *vocational guidance* be necessary.

249. "Experimental tests of central factors," says Mr. Cyril Burt, "are limited; observation and experiment must go together with a survey of temperament and character. Physical, medical and educational attainment all come into consideration, but the criterion of the last must be something more definite than the school standards." It must be as nearly as we can get it, the total experience, the whole personality of the child. For nearly every type of employment there exists a certain minimum of educational attainment and vocational aptitude respectively, and to use adolescence wisely and to its highest capacity in industry it is

necessary to estimate these faculties. The School Medical Officer should be able in large measure to advise the prospective employer as to (a) the physique, (b) the temperament, (c) the educational and intelligence capacity, (d) the personality of the boy; and he ought further to be able (e) to advise the employer, not only as to the best workers for his work, but also, as Sir Lynden Macassey says, "the best work for the workers" and "the best working conditions for the workers and the work." For at bottom these are in great degree physiological questions. More than half the jobs—4,034 out of 7,882 kinds of jobs—at the Ford Motor Works were found not to require full physical capacity for their proper performance. In other words, industry can, under suitable conditions, provide wage work for a higher average of incompleteness or impaired physique than we have hitherto appreciated. (See *My Life and Work*, by Henry Ford, 1923, pp. 107–108.)

250. What is needed is fuller knowledge of the physiological capacity of the worker, and the more ingenious adaptation and subdivision of labour to the capacities of the workers. This involves an understanding by the School Medical Officer of the strain and stress of industry, of where exactly the shoe pinches. Arrangement of raw material, methods of training, distribution of periods of work, rest pauses, reduction of monotony and fatigue, means and factors of selection of workers for different kinds of work—all this is as important as sanitation, healthy conditions of labour, illumination, ventilation, cubic space, canteens and so forth. The whole organisation of industry is undergoing profound changes, and it is idle for school doctors and teachers to endeavour to prepare their pupils for industry—and this is part of their business—unless they themselves understand in a general way the sort of life for which they are preparing them. The day for working in water-tight compartments has gone, the time for intelligent appreciation and active co-operation has more than come. "Everything," it has been said, "can always be done better than it is being done."

I have the honour to be,

Sir,

Your obedient servant,

GEORGE NEWMAN.

Whitehall,

August, 1923.

APPENDIX A.

MEDICAL DEPARTMENT OF BOARD OF EDUCATION.

Chief Medical Officer.

*SIR GEORGE NEWMAN, K.C.B., M.D., HON. D.C.L., F.R.C.P.

Medical Officers.

ALFRED EICHHOLZ, C.B.E., M.A., M.D. (*Chief Medical Inspector*), †MISS JANET M. CAMPBELL, M.D., M.S. (*Chief Woman Medical Adviser*), ‡RALPH H. CROWLEY, M.D., M.R.C.P., MISS LILIAN E. WILSON, M.D., HENRY C. T. LANGDON, O.B.E., M.B., RALPH P. WILLIAMS, M.D., MISS MURIEL C. BYWATERS, M.D., M. TRAVERS MORGAN, M.C., M.B.

H.M. Inspectors of Physical Training.

CAPTAIN F. H. GRENFELL, D.S.O., R.N., MISS ANN E. E. KOETTER, MISS N. M. PALMER, MISS R. HOPE GREENALL, MISS AUDREY B. ASH, MISS EVELYN M. PERRY, SIDNEY J. PARKER, O.B.E., MAJOR A. E. SYSON, MISS EDITH R. CLARKE, MISS C. F. FERGUSON.

School Medical Service.

1. The particulars given in the Appendix comprise in respect of each area the name of the School Medical Officer, the number of scholars in average attendance in the Public Elementary Schools, the number of children medically inspected during 1922—whether in the course of the routine inspections prescribed by the Code or as ailing children or “specials,” and the scope of the medical treatment arrangements of the Local Education Authority, as sanctioned by the Board for the year ended 31st March 1923.

2. An asterisk following the name of the School Medical Officer indicates that he is also Medical Officer of Health or Assistant Medical Officer of Health. In the great majority of cases he is acting in that capacity for the area named.

3. Some particulars concerning the number of School Medical Officers, Specialists, and Nurses engaged in the work of the School Medical Service are given in Section II. of this Report.

* Also Chief Medical Officer of the Ministry of Health.

† Also a Senior Medical Officer of the Ministry of Health.

‡ Also Chief Examiner in Hygiene.

APPENDIX A—continued.

TABLE I.

TABLE SHOWING THE NAME OF THE SCHOOL MEDICAL OFFICER EMPLOYED BY EACH LOCAL EDUCATION AUTHORITY, together with the Average Attendance for 1921-22, the Number of Children medically inspected (as shown by the School Medical Officers' Reports for 1922), and the Medical Treatment, &c., included in the Scheme of the Local Education Authority.

The Key to the letters given in the last column of the Table is as follows:—

R. denotes that refraction work is undertaken. In the majority of cases arrangements are made for the provision of spectacles.

M. denotes that minor ailments are treated either at a clinic, in the homes or schools, or at a hospital.

D. denotes that dental treatment is undertaken.

TA. denotes that the treatment of enlarged tonsils and adenoids is provided for at a clinic or hospital.

X. denotes that X-ray treatment of ringworm is provided for.

Cl. denotes that school clinics have been established, the number of such being given in brackets. A † denotes that dental clinics have also been established at schools or temporary centres the number of which is not available.

H. denotes that arrangements are made for hospital treatment in return for a contribution from the Local Education Authority.

ENGLAND (COUNTIES).

LOCAL EDUCATION AUTHORITY.	NAME OF SCHOOL MEDICAL OFFICER.	Average Atten- dance. 1921-22.	Number of Children inspected during 1922.		Medical Treatment, &c., included in the Scheme of the Local Education Authority sanctioned for the Year ended 31st March 1923.
			Routine Inspec- tions.	"Spe- cials."	
(1)	(2)	(3)	(4)	(5)	(6)
Bedfordshire ...	Herdman, R. T.* ...	15,590	5,020	434	R. D. TA. Cl.† H.
Berkshire ...	Taylor, G. C.* ...	19,047	7,601	1,055	R. M. X.
Buckinghamshire ...	Holden, S. J. C.* ...	26,702	8,906	2,242	R. M. D. TA. X. Cl. (63) H.
Cambridgeshire ...	Robinson, F.* ...	9,943	3,201	290	R. M. D. TA. X. Cl.† H.
Cheshire ...	Young, M.* ...	54,857	18,541	4,741	R. D. TA. Cl. (8) H.
Cornwall ...	Clarke, E. M.* ...	35,904	11,045	4,135	R. M. H.
Isles of Scilly ...	Addison, W. B.* ...	220	73	—	M.
Cumberland ...	Morison, F. H.* ...	25,206	7,521	5,027	R. M. D. TA. Cl. (7) H.
Derbyshire ...	Barwise, S.* ...	67,357	26,037	1,413	R. M. D. TA. X. Cl. (12†).
Devonshire ...	Adkins, G.* ...	42,521	14,899	1,995	R. M. D. TA. X. Cl. (10†) H.

* See note 2 on page 133.

† See note above under Clinics (Cl.).

‡ Fitted travelling dental van.

TABLE I—*continued.*ENGLAND (COUNTIES)—*continued.*

(1)	(2)	(3)	(4)	(5)	(6)
Dorset	Robinson, J. E.* ...	19,333	7,475	527	R. M. D. TA. X. Cl.† H.
Durham	Hill, T. E.* ...	134,472	38,298	2,911	R. M. D. Cl. (3).
Ely, Isle of	Walker, J. P.* ...	9,853	3,105	296	R. M. D. TA. Cl. (4§) H.
Essex... ..	Bullough, W. A.* ...	56,970	16,644	6,422	R. M. D. TA. X. Cl. (20†) H.
Gloucestershire	Martin, J. M.* ...	37,384	11,744	8,913	R. M. D. TA. Cl. (12†) H.
Hampshire	Lyster, R. A.* ...	40,157	7,739	5,258	R. TA. X. H.
Herefordshire	Lowe, P.* ...	11,494	3,320	325	M. D. Cl. (5†).
Hertfordshire	Thomson, H. H.* ...	38,965	13,509	5	R. M. D. TA. X. Cl. (9†) H.
Huntingdonshire	Moss-Blundell, C. B.*	7,856	1,879	176	M. Cl. (1).
Kent	Greenwood, A.* ...	70,861	21,947	2,359	R. M. D. TA. X. Cl. (7†) H.
Lancashire	Butterworth, J. J.*	121,185	42,784	9,359	R. M. D. TA. X. Cl. (8) H.
Leicestershire	Robinson, T.* ...	31,978	10,938	1,524	R. M. D. TA. Cl. (3†) H.
Lincolnshire— Parts of—					
Holland... ..	... ..	9,673	2,735	208	R. M.
Kesteven	Lowe, A. H.* ...	14,560	5,485	416	R. M. D. TA. Cl. (4†) H.
Lindsey	Glegg, R. A.* ...	34,421	12,919	502	R. M. D. TA. Cl. (14†) H.
Middlesex	Tate, J.* ...	36,611	13,021	15,265	R. M. D. Cl. (22†).
Norfolk	Nash, J. T. C.* ...	44,672	13,698	2,111	R. M. D. TA. Cl. (10†) H.
Northamptonshire	Paget, C. E.* ...	25,379	7,885	3,757	R. M. D. Cl. (4†).
Northumberland	Whitley, W. F. J.*...	46,699	13,714	1,487	R. M. D. TA. Cl. (3) H.
Nottinghamshire	Handford, H.* ...	44,657	13,349	3,118	R. M. D. TA. Cl. (2†) H.
Oxfordshire	Coles, C.* ...	16,727	5,756	551	R. M. D. TA. X. Cl.† H.
Peterborough, Soke of	Rolleston, C.* ...	1,395	463	10	
Rutland	Rolleston, C.* ...	2,418	945	1	R. M. D. X. Cl. (1§).
Shropshire	Wheatley, J. ...	27,658	8,698	663	R. M. D. TA. X. Cl. (7†) H.
Somerset	Savage, W. G.* ...	41,567	13,021	2,952	R. M. D. TA. Cl. (2†) H.
Staffordshire	Carruthers, W. D.*	73,472	24,372	2,144	R. M. D. TA. Cl. (38†) H.
Suffolk, East	Wood - White, B. (acting).*	23,463	8,352	708	R. D. TA. X. Cl.† H.
Suffolk, West	Bygott, A. H.* ...	13,329	4,957	—	R. M. Cl. (5).
Surrey	Cates, H. J.* ...	58,399	19,208	3,038	R. M. D. TA. X. Cl. (28) H.
Sussex, East... ..	Foulerton, A. G. R.*	20,149	6,669	1,593	R. M. D. TA. Cl.† H.
Sussex, West, and Chichester.	Smedley, R. D.* ...	18,450	5,888	1,736	R. M. D. TA. X. Cl. (7†) H.
Warwickshire	Wood, A. H.* ...	34,291	12,053	3,607	R. M. D. TA. X. Cl. (8†) H.
Westmorland	Henderson, W. E.*	5,693	2,146	135	R. M. D. Cl. (1†).

* See note 2 on page 133.

† See note on page 134.

‡ 4 Fitted travelling dental vans.

§ Fitted travelling dental van.

TABLE I—*continued.*ENGLAND (COUNTIES)—*continued.*

(1)	(2)	(3)	(4)	(5)	(6)
Wight, Isle of ...	Fairley, J.* ...	8,608	2,842	516	R. M. TA. X. Cl. (2) H.
Wiltshire ...	Tangye, C. E.* ...	28,525	8,768	357	R. M. D. TA. X. Cl. (3†) H.
Worcestershire ...	Fosbroke, G. H.* ...	30,697	11,986	3,389	R. M. D. TA. X. Cl. (11†) H.
Yorkshire :					
East Riding ...	Thornley, R. L.* ...	18,057	10,956	286	R. M. D. TA. Cl. (1†) H.
North Riding ...	Mason, H.* ...	38,397	13,124	4,454	R. M. TA. Cl. (4) H.
West Riding ...	Kaye, J. R.* ...	164,955	53,979	9,942	R. M. D. Cl. (65†).
London ...	Hamer, Sir W. H.*	615,152	240,143	35,066	R. M. D. TA. X. Cl. (57) H.

WALES (COUNTIES).

Anglesey ...	Davies, A.* ...	6,399	2,380	524	R. M. D. TA. X. Cl. (6) H.
Brecknockshire ...	Davies, H.* ...	8,955	2,716	80	R. M. TA. H.
Cardiganshire ...	Davies, L. M.* ...	6,459	2,301	76	R. TA. H.
Carmarthenshire ...	Davies, W. L. G. ...	20,075	10,542	552	M.
Carnarvonshire ...	Parry-Edwards, E. L.*	15,423	3,016	577	R. M. D. TA. X. Cl. (9†) H.
Denbighshire ...	Roberts, T.* ...	17,814	6,620	148	R. M. Cl. (5).
Flintshire ...	Williams, A. E.* ...	15,687	5,670	999	R. M. D. TA. Cl. (3†) H.
Glamorganshire ...	Williams, E. C.* ...	64,777	23,946	83	R. M. D. Cl. (4).
Merionethshire ...	Lewys-Lloyd, E.* ...	5,217	1,719	43	R. M. TA. Cl. (6).
Monmouthshire ...	Rocyn-Jones, D.* ...	46,332	11,297	1,237	R. M. D. TA. X. Cl. (9†) H.
Montgomeryshire ...	Humphreys, C. E.*	6,524	2,480	155	R. M. D. TA. Cl. (1†) H.
Pembrokeshire ...	Middleton, H.* ...	10,253	2,558	397	R. M. D. TA. Cl. (5†) H.
Radnorshire ...	Miller, J. W.* ...	2,791	925	191	R. M. TA. H.

ENGLAND (COUNTY BOROUGHES).

Barnsley ...	Francis, T. E.* ...	10,381	4,140	951	R. M. TA. Cl. (1) H.
Barrow-in-Furness ...	Orr, J.* ...	11,048	4,145	31	R. M. D. TA. Cl. (5) H.
Bath ...	Blackett, J. F.* ...	7,721	2,694	2,597	R. M. D. TA. X. Cl. (2) H.
Birkenhead ...	Mathieson, D. M.*	21,414	9,019	3,093	R. M. D. X. Cl. (2) H.
Birmingham ...	Auden, G. A. ...	130,805	45,105	28,727	R. M. D. TA. X. Cl. (10).
Blackburn ...	Daley, W. A.* ...	15,925	6,313	2,279	R. M. D. TA. X. Cl. (2) H.
Blackpool ...	Adams, M. (Miss) ...	7,187	2,415	2,427	R. M. D. TA. Cl. (1) H.
Bolton ...	Moffatt, C. W. P.* ...	23,362	6,593	2,704	R. M. TA. X. Cl. (1) H.
Bootle ...	Wood, F. T. H.* ...	11,580	4,023	2,386	R. M. D. TA. X. Cl. (1) H.
Bournemouth ...	Edwards, A. D.* ...	7,548	2,681	1,768	R. M. D. TA. X. Cl. (3).

* See note 2 on page 133.

† See note on page 134.

‡ 1 Fitted travelling van.

TABLE I—continued.

ENGLAND (COUNTY BOROUGH S)—continued.

(1)	(2)	(3)	(4)	(5)	(6)
Bradford ...	Buchan, J. J.* ...	31,778	9,491	10,091	R. M. D. TA. X. Cl. (4).
Brighton ...	Forbes, D.* ...	15,487	5,520	221	R. M. D. TA. X. Cl. (2).
Bristol ...	Askins, R. A. ...	50,034	16,248	20,383	R. M. D. X. Cl. (4) H.
Burnley ...	Holt, T.* ...	12,896	3,357	2,299	R. M. D. X. Cl. (1).
Burton-on-Trent ...	Cowie, J. M.* ...	7,255	2,331	1,992	R. M. X. Cl. (1).
Bury ...	Buckley, G. G.* ...	6,722	2,384	757	R. M. TA. Cl. (1) H.
Canterbury ...	Robinson, J. ...	3,136	973	180	R. M. TA. Cl. (1) H.
Carlisle ...	Beard, J.* ...	7,561	2,483	742	R. M. D. X. Cl. (1).
Chester ...	Rennet, D.* ...	5,489	2,039	1,512	R. M. D. TA. Cl. (1) H.
Coventry ...	Snell, E. H.* ...	18,804	7,189	4,702	R. M. D. TA. X. Cl. (1) H.
Croydon ...	Newsholme, H. P.* ...	22,945	7,892	672	R. M. D. TA. X. Cl. (3).
Darlington ...	Mostyn, S. G.* ...	9,941	2,351	709	R. M. D. TA. X. Cl. (1) H.
Derby ...	Brindley, A. E.* ...	19,046	5,993	4,889	R. M. D. TA. X. Cl. (4) H.
Dewsbury ...	Holden, O. M.* ...	6,869	2,504	2,163	R. M. D. Cl. (1).
Dudley ...	Blaker, P. S.* ...	9,443	3,378	54	R. M. D. TA. Cl. (3)
Eastbourne ...	Willoughby, W. G.* ...	4,722	1,285	28	R. M. D. TA. X. Cl. (1) H.
East Ham ...	Benton, W.* ...	22,186	6,569	3,252	R. M. D. TA. X. Cl. (3) H.
Exeter ...	Stirk, P. H. * ...	6,796	2,325	1,137	R. M. D. TA. X. Cl. (2) H.
Gateshead ...	Clayton, T. M.* ...	21,151	7,513	2,348	R. M. D. Cl. (1)
Gloucester ...	Berry, R. B.* ...	7,375	2,776	63	R. M. D. TA. Cl. (1) H.
Great Yarmouth	Stevens, A. N.* ...	8,043	2,464	503	R. M. TA. X. Cl. (1) H.
Grimsby ...	Stevens, B. C.* ...	11,839	1,947	86	
Halifax ...	Banks, C.* ...	9,791	3,630	2,356	R. M. D. TA. Cl. (1) H.
Hastings ...	Bruce, G. R.* ...	6,430	2,014	93	R. M. D. TA. Cl. (2) H.
Huddersfield	Moore, S. G.* ...	12,438	4,760	2,241	R. M. D. Cl. (1).
Ipswich ...	Pringle, A. M. N.* ...	10,956	2,912	2,436	R. M. D. TA. X. Cl. (1) H.
Kingston-on-Hull	Fraser, J. W. ...	43,810	15,617	5,399	R. M. D. Cl. (2).
Leeds ...	Wear, A. ...	60,657	22,152	18,713	R. M. D. X. Cl. (7).
Leicester ...	Warner, A. ...	31,560	8,756	7,217	R. M. D. TA. X. Cl. (5).
Lincoln ...	Coleman, C. J.* ...	8,793	3,165	2,386	R. M. D. TA. Cl. (1) H.
Liverpool ...	Hope, E. W.* ...	122,889	35,608	11,841	R. M. D. TA. X. Cl. (10).
Manchester ...	Ritchie, A. B. ...	104,209	33,307	27,729	R. M. D. TA. X. Cl. (6).
Middlesbrough	Dingle, C. V.* ...	21,854	6,514	5,394	R. M. D. TA. Cl. (1) H.
Newcastle-on-Tyne	Foggin, G. ...	42,795	16,497	11,783	R. M. D. Cl. (3).
Northampton	McGrindle, J. D.* ...	12,191	2,853	3,312	R. M. D. X. Cl. (1).

* See note 2 on page 133.

TABLE I—*continued.*ENGLAND (COUNTY BOROUGH)—*continued.*

(1)	(2)	(3)	(4)	(5)	(6)
Norwich ...	Pattin, H. C.* ...	16,570	6,915	1,661	R. M. D. TA. Cl. (1) H.
Nottingham ...	Boobhyer, P.* ...	37,287	13,769	6,947	R. M. D. TA. X. Cl. (5).
Oldham ...	Wilkinson, J. B.* ...	18,373	6,218	—	R. M. TA. X. Cl. (1) H.
Oxford ...	Ormerod, A. L.* ...	6,734	2,578	146	R. M. D. TA. X. Cl. (4) H.
Plymouth ...	Hall, O.* ...	27,440	7,455	8,133	R. M. D. TA. X. Cl. (3) H.
Portsmouth ...	Blake, V. J. ...	33,221	10,982	2,139	R. M. D. TA. X. Cl. (1) H.
Preston ...	Sharpe, F. A.* ...	16,486	5,866	93	R. M. D. TA. X. Cl. (1) H.
Reading ...	Milligan, H. J.* ...	12,773	4,386	1,450	R. M. D. TA. X. Cl. (1) H.
Rochdale ...	Anderson, A. G.* ...	11,174	3,681	2,119	R. M. D. Cl. (1).
Rotherham ...	Turner, A. C. F. ...	10,557	2,020	2,210	R. M. D. X. Cl. (1).
St. Helens ...	Hauxwell, F.* ...	17,753	6,152	4,303	R. M. D. TA. X. Cl. (1).
Salford ...	Osborne, H.* ...	34,964	11,603	5,343	R. M. D. TA. X. Cl. (2) H.
Sheffield ...	Chetwood, T. ...	78,460	24,248	30,953	R. M. D. X. Cl. (9).
Smethwick ...	Ferguson, J. B.* ...	11,511	3,648	1,659	R. M. TA. X. Cl. (2) H.
Southampton ...	Lauder, R. E.* ...	21,975	7,583	1,718	R. M. D. TA. X. Cl. (2).
Southend-on-Sea ...	Pugh, C. G.* ...	9,602	3,946	3,076	R. M. D. TA. Cl. (1) H.
Southport ...	Barnes, G. C.* ...	6,246	2,209	1,906	R. M. D. TA. X. Cl. (1) H.
South Shields ...	Nicoll, W.* ...	20,119	6,937	6,694	R. M. D. TA. X. Cl. (2).
Stockport ...	Jenner, A. G.* ...	15,494	5,680	5,093	R. M. D. TA. X. Cl. (2) H.
Stoke-on-Trent ...	Hughes, R. ...	40,503	13,818	6,010	R. M. D. Cl. (4).
Sunderland ...	Allan, D. ...	26,709	9,440	1,493	R. M. D. Cl. (1).
Tynemouth ...	Hislop, J. A.* ...	9,922	3,611	2,149	R. M. TA. Cl. (1) H.
Wakefield ...	Gibson, T.* ...	6,944	2,209	1,906	R. M. Cl. (1).
Wallasey ...	Barlow, T. W. N.* ...	9,407	3,344	332	R. M. D. TA. Cl. (1).
Walsall ...	Clark, J. A. M.* ...	16,109	4,369	813	R. M. D. TA. Cl. (2) H.
Warrington ...	Joseph, G. W. N.* ...	12,729	4,519	2,539	R. M. D. TA. X. Cl. (1) H.
West Bromwich ...	Stocks, R. W.* ...	12,042	2,466	1,512	R. M. D. TA. Cl. (4) H.
West Ham ...	Sanders, C.* ...	53,012	17,848	10,043	R. M. D. TA. X. Cl. (4) H.
West Hartlepool ...	Lilico, G.* ...	10,679	3,961	84	R. M. D. X. Cl. (1).
Wigan ...	Whitehead, H.* ...	12,352	2,773	4,047	M. D. Cl. (1).
Wolverhampton ...	Badger, W. S. ...	15,424	5,075	682	R. M. Cl. (1).
Worcester ...	Andrews, M. B. (Miss)*	6,843	1,982	619	R. M. D. TA. X. Cl. (1) H.
York ...	Smith, E. M.* ...	11,717	2,053	214	R. M. D. Cl. (1).

* See note 2 on page 133.

TABLE I—*continued*.
WALES (COUNTY BOROUGHs).

(1)	(2)	(3)	(4)	(5)	(6)
Cardiff	Picken, R. M. F.*	28,455	9,911	2,552	R. M. D. TA. Cl. (2).
Merthyr Tydfil ...	Duncan, A.* ...	13,794	4,424	1,933	R. M. D. TA. X. Cl. (2) H.
Newport (Mon.) ...	Burpitt, H. R. ...	13,624	4,622	10,988	R. M. D. TA. X. Cl. (1).
Swansea	Evans, T.* ...	25,538	8,029	3,703	R. M. D. TA. X. Cl. (5).

ENGLAND (BOROUGHs).

Accrington	Greenhalgh, A.* ...	4,868	1,659	940	R. M. D. TA. Cl. (1) H.
Acton	Thomas, D. J.* ...	8,057	2,642	223	R. M. D. TA. X. Cl. (1).
Aldershot	Routley, E. W.* ...	2,974	997	739	R. M. D. TA. Cl. (1).
Ashton-under-Lyne...	Talent, J. W.* ...	5,582	2,061	134	R. M. D. TA. Cl. (1) H.
Bacup	Brown, J. P.* ...	2,513	873	212	R. M. TA. X. Cl. (1) H.
Banbury	Johns, A. T.* ...	1,950	689	285	R. M. D. TA. Cl. (1) H.
Barnstaple	Gibbs, S. R. ...	1,786	537	180	R. M. D. TA. X. Cl. (1) H.
Batley	Pearce, G. H.* ...	4,513	1,371	176	R. M. D. TA. Cl. (1) H.
Bedford	Phillips, F. B. W.*	4,015	1,339	178	R. M. D. Cl. (2).
Beverley	Munro, H. L.* ...	2,097	727	707	R. M. TA. Cl. (1) H.
Bexhill	Weston, G. H.* ...	1,343	496	70	R. M. D. TA. Cl. (1).
Blyth... ..	MacLachlan, J. M.*	5,351	2,612	69	R. M. D. Cl. (1).
Boston	Tuxford, R. ...	2,363	965	220	R. M. D. TA. Cl. (1) H.
Bridgwater	Pope, H. S.* ...	2,097	747	25	M. D. Cl. (1).
Bridlington	Jarratt, A. K.* ...	1,614	522	5	R. M. TA. H.
Brighouse	Belam, F. A.* ...	2,433	993	30	R. M. D. TA. X. Cl. (1).
Bromley	Stalker, W. S.* ...	3,751	1,345	2,777	R. M. D. TA. Cl. (3).
Bury St. Edmunds...	Stork, E.* ...	1,934	886	464	R. M. D. TA. X. Cl. (1) H.
Buxton	Flint, T. B.* ...	1,430	525	212	R. M. TA. Cl. (1).
Cambridge	Laird, A. J.* ...	6,771	2,026	174	R. M. D. TA. X. Cl. (2) H.
Chatham	Holroyde, J.* ...	5,973	2,199	333	R. M. D. TA. X. Cl. (2) H.
Chelmsford	Veroe, R. H.* ...	2,439	547	10	R. M. D. TA. X. Cl. (2) H.
Cheltenham	Garrett, J. H.* ...	5,626	1,757	2,796	R. M. D. TA. Cl. (1) H.
Chepping Wycombe	Reynolds, L. L. C. ...	2,895	839	504	R. M. D. TA. X. Cl. (2) H.
Chesterfield	Garrow, R. P.* ...	9,414	2,118	624	R. M. D. X. Cl. (1).
Chichester (see West Sussex).					
Chorley	Middlebrook, H. E.*	4,276	1,053	307	R. M. D. TA. X. Cl. (1) H.
Clitheroe	Barker, W. E.* ...	1,418	547	125	R.
Colchester	Corfield, W. F.* ...	5,578	1,599	824	R. M. D. TA. X. Cl. (1) H.

* See note 2 on page 133.

TABLE I—continued.

ENGLAND (BOROUGHES)—continued.

(1)	(2)	(3)	(4)	(5)	(6)
Colne	Doyle, W.*	2,960	931	429	R. M. D. Cl. (1).
Congleton	Catto, P. T.*	1,758	675	170	M. D. Cl. (1).
Crewe	Ingram, J. D.*	6,932	2,189	62	R. M. D. Cl. (2).
Darwen	Robertson, J.*	4,410	1,213	51	R. M. D. TA. Cl. (1) H.
Deal	Hulke, F. M. S.*	1,298	486	36	R. M. TA. X. Cl. (1) H.
Doncaster	Anderson, D. L.*	7,465	2,417	257	R. M. TA. Cl. (1) H.
Dover	McMaster, A. B.*	5,714	2,561	111	R. M. D. TA. X. Cl. (1).
Dukinfield	Robertson, J. R.	2,793	883	135	R. M. D. TA. Cl. (1) H.
Durham	McArdle, F. J.	2,399	692	—	R. M. TA. X. Cl. (1) H.
Ealing	Orr, T.*	6,196	2,185	1,353	R. M. D. TA. X. Cl. (1).
East Retford	Beale, H. R.*	1,786	546	24	R. M. D. TA. Cl. (1) H.
Eccles	Spence, J. E.*	6,226	2,462	988	M. D. TA. X. Cl. (1) H.
Falmouth	Lawry, J. L.*	1,405	462	—	R. M. Cl. (1) H.
Faversham	Evers, C. J.*	1,509	534	77	R. TA. H.
Folkestone	Yunge - Bateman, M. G.*	4,145	1,537	22	R. M. D. TA. X. Cl. (1) H.
Gillingham	Muir, W. A.*	7,087	2,253	2,246	R. M. D. TA. X. Cl. (1) H.
Glossop	Milligan, E. H. M.*	2,442	755	76	R. M. D. Cl. (1).
Gosport	Laplough, W. H.*	4,661	1,822	70	R. M. TA. X. Cl. (2) H.
Gravesend	Outred, C. D.*	3,726	1,433	1,021	R. M. D. TA. Cl. (1).
Guildford	Pierce, R. W. C.*	2,965	995	39	R. M. D. TA. X. Cl. (1) H.
Harrogate	Mair, J.*	3,362	1,393	803	R. M. D. TA. X. Cl. (3) H.
Hartlepool	McKendrick, W.*	3,589	1,256	1,019	R. M. D. TA. Cl. (1) H.
Harwich	Porter, G. F.*	1,933	741	77	R. M. D. TA. X. Cl. (1) H.
Haslingden	Coates, W. R. A.*	1,881	658	44	R. M. D. Cl. (1).
Hemel Hempstead	Gruggen, W.*	1,757	582	318	R. M. D. TA. Cl. (2)
Hereford	Brown, A. M.*	2,987	938	757	R. M. D. TA. Cl. (2)
Heywood	Alexander, W.*	3,345	934	1,563	R. M. D. Cl. (1).
Hornsey	Nankivell, A. T.*	7,012	2,622	1,688	R. M. D. TA. X. Cl. (1).
Hove	Parry, L. A.	3,409	1,228	725	R. M. D. TA. Cl. (1).
Hyde	Gebbie, N.*	4,120	1,310	972	R. M. D. TA. Cl. (1) H.
Ilkeston	King, R. de V.*	5,127	1,949	954	R. M. D. TA. X. Cl. (1).
Jarrow	Towers, A. K.*	6,821	2,113	2,018	R. M. Cl. (1).
Keighley	Scatterty, W.*	4,490	1,418	1,871	R. M. D. TA. Cl. (1) H.
Kendal	Henderson, W. E.*	1,759	565	201	R. M. D. Cl. (1).
Kidderminster	Griffiths, J. C.	3,665	1,024	396	R. M. D. Cl. (1).
King's Lynn	Foulkes, P. G.*	2,912	1,114	360	R. M. D. TA. Cl. (1) H.
Kingston-on-Thames	Matthews, E. W.*	4,663	1,698	648	M. Cl. (1).
Lancaster	Buchanan, J. D.*	5,149	1,775	239	R. M. D. Cl. (1).
Leigh	Beckitt, J. C.*	6,344	1,288	1,690	R. M. D. TA. Cl. (1).
Lewes	Dow, W. A.*	1,261	383	49	R. M. D. TA. Cl. (1) H.

* See note 2 on page 133.

TABLE I—*continued.*
ENGLAND (BOROUGH)—*continued.*

(1)	(2)	(3)	(4)	(5)	(6)
Loughborough ...	Blackham, N. B.*	3,330	1,305	27	R. M. D. TA. Cl. (1) H.
Lowestoft ...	Stott, W.*	6,929	2,124	588	R. M. D. TA. Cl.(3) H.
Luton ...	Archibald, W.*	7,691	2,369	1,673	R. M. D. TA. Cl. (1) H.
Lytham, St. Anne's†	Walker, G. C.*	—	—	—	—
Macclesfield ...	Marsh, J. H.*	3,935	1,389	275	R. M. D. TA. X. Cl. (1) H.
Maidenhead ...	Paterson, J. J.*	1,986	700	314	R. M. D. TA. Cl. (1) H.
Maidstone ...	Oliver, C. P.*	4,454	1,501	448	R. M. D. TA. X. Cl. (1) H.
Mansfield ...	Wilson, J. E.*	6,806	1,490	500	R. M. D. TA. Cl (1) H.
Margate ...	McCombe, R.*	3,021	1,039	495	R. M. D. TA. X. Cl. (1).
Middleton ...	Beggs, S. T.*	3,374	934	638	R. M. TA. X. Cl. (1) H.
Morecambe ...	Watterson, J. W.*	1,424	459	100	—
Morley ...	Steele, S. T.*	3,007	1,252	1,014	R. M. D. Cl. (2).
Mossley ...	Cameron, W.	1,592	566	147	R. M. D. TA. Cl. (1) H.
Nelson ...	Markham, R. G.*	4,463	1,345	337	R. M. D. X. Cl. (1).
Newark ...	Baxter, W.*	2,595	728	260	R. M. D. TA. Cl. (1) H.
Newbury ...	Hickman, R.	1,566	494	38	R. M. X. Cl. (1).
Newcastle - under - Lyme.	White, A.*	3,287	1,133	37	M. Cl. (1).
Newport ...	McKay, J. B.	1,548	515	133	R. M. D. TA. X. Cl. (2)
New Windsor ...	Crofts, A. D.*	2,640	836	28	R. M. D. TA. X. Cl. (1) H.
Nuneaton ...	Tapper, K. E.*	6,586	1,872	2,040	R. M. D. TA. X. Cl. (1).
Ossett ...	Mill, G. S. ...	2,010	660	260	R. M. TA. Cl. (1) H.
Penzance ...	Lawry, R. C.*	1,395	468	345	R. M. Cl. (1).
Peterborough ...	Johnstone, W.*	4,510	1,151	122	R. M. D. TA. X. Cl. (1) H.
Pontefract ...	Hessel, W. T.*	2,450	1,034	19	M. Cl. (1).
Poole ...	Horne, R. J. M.*	5,521	1,634	3,481	R. M. D. TA. X. Cl. (4).
Pudsey ...	Squire, F. H.*	1,492	480	22	M. D. TA. Cl. (1) H.
Ramsgate ...	Bannister, W. J.*	4,010	1,548	1,425	R. M. D. TA. X. Cl. (1) H.
Rawtenstall ...	Helm, J. E.*	3,260	1,286	152	R. M. D. TA. Cl. (3) H.
Reigate ...	Blackler, H. J.*	3,012	992	197	R. M. X. Cl. (1).
Richmond ...	Brebner, C. S.*	3,160	1,188	63	R. M. D. TA. X. Cl. (1) H.
Rochester ...	Pritchett, S. I.*	4,059	1,443	204	R. M. TA. X. Cl. (1) H.
Royal Leamington Spa.	Goldie, W. L. M.*	2,944	1,102	640	R. M. D. TA. X. Cl. (1) H.
Salisbury ...	Fison, E. T.*	2,605	767	537	R. M. TA. X. Cl. (1)
Scarborough ...	Linton, S. F.*	3,919	1,890	919	R. M. D. Cl. (1).
Shrewsbury ...	Smith, H. G.*	3,889	1,249	1,383	R. M. D. TA. X. Cl. (1) H.
Stalybridge ...	Howe, G. B.	3,160	1,040	28	R. M. D. TA. Cl. (1) H.
Stockton-on-Tees ...	Horne, T.*	10,075	3,183	42	R. M. Cl. (1).
Sutton Coldfield ...	Wright, J. H.*	1,813	722	64	R. M. D. TA. X. Cl. (1) H.

* See note 2 on page 133.

† Statistics for 1922 included in Lancashire.

TABLE I—*continued.*ENGLAND (BOROUGHES)—*continued.*

(1)	(2)	(3)	(4)	(5)	(6)
Swindon	Brewer, D.* ...	8,307	2,673	760	R. M. D. TA. X. Cl. (2) H.
Taunton	Allen, J.* ...	2,807	799	693	R. M. D. TA. Cl. (1) H.
Tiverton	Burgess, R.* ...	1,063	305	226	R. M. D. Cl. (1) H.
Todmorden	Williams, C. L.* ...	2,576	1,044	416	R. M. D. Cl. (1).
Torquay	Dunlop, T.* ...	3,262	1,217	1,159	R. M. D. TA. Cl. (3) H.
Tunbridge Wells ...	Linton, F. C.* ...	3,585	1,438	1,001	R. M. D. TA. Cl. (1) H.
Wallsend	Rutherford, R.* ...	7,456	2,112	250	M. TA. Cl. (1) H.
Wednesbury	Garman, W. C.* ...	4,688	1,633	457	R. M. D. TA. Cl. (1) H.
Weymouth and Mel- combe Regis.	Barclay, W. B.* ...	2,508	859	121	M. D. Cl. (1).
Whitehaven	Manson, M.* ...	3,094	1,030	382	R. M. D. Cl. (1).
Widnes	Jones, A.* ...	6,578	2,589	2,553	R. M. TA. X. Cl. (3) H.
Wimbledon	Gilmour, A.* ...	5,588	1,987	1,836	R. M. D. TA. X. Cl. (1) H.
Winchester	Young, W. A. B.*	2,616	1,085	1,612	R. M. TA. X. Cl. (1) H.
Workington	Macpherson, R. W.*	4,382	1,583	93	R. M. D. Cl. (1).
Worthing	Wilshaw, R. H.* ...	3,017	995	245	R. M. D. TA. X. Cl. (1).
Yeovil	Gee, C. W.* ...	1,860	673	1,057	R. M. D. TA. Cl. (2) H.

WALES (BOROUGHES).

Carmarthen	Bowen-Jones, L. M.*	1,314	456	14	M.
Llanelly	Pole, L. W.* ...	6,148	2,191	653	R. M. Cl. (1).
Neath	Morris, J. M.* ...	2,970	1,049	481	R. M. Cl. (1).
Pembroke	Armitage, W. S.* (temporary).	2,047	689	263	R. M. Cl. (2).
Port Talbot	Richards, E. W.*	6,618	1,518	414	—
Wrexham	Edwards, T. P.* ...	2,549	853	151	R. M. D. TA. X. Cl. (1) H.

ENGLAND (URBAN DISTRICTS).

Barking Town ...	Simpson, K.* ...	6,019	2,182	1,029	R. M. D. TA. X. Cl. (1) H.
Beckenham	Clements, J. M.* ...	2,953	1,100	471	R. M. D. TA. X. Cl. (2) H.
Bilston	Ridley-Bailey, T.*	4,903	1,580	6	R. M. Cl. (1).
Cannock	Clendinnen, W. McE.*	5,582	2,141	430	M. Cl. (2).
Chadderton	Wood, J.* ...	4,285	1,502	915	R. M. TA. X. Cl. (1) H.
Chiswick	Leaning, R. C.* ...	4,061	1,467	1,398	R. M. D. TA. X. Cl. (2) H.

* See note 2 on page 133.

TABLE I—*continued.*ENGLAND (URBAN DISTRICTS)—*continued.*

(1)	(2)	(3)	(4)	(5)	(6)
Coseley	Waddell, C. H.* ...	3,636	1,224	332	R. TA. H.
Edmonton	Harding, H. W.* ...	10,745	3,566	2,525	R. M. D. TA. X. Cl. (1) H.
Enfield	Forrester, Gertrude (Mrs.).	9,201	3,272	3,121	R. M. D. TA. X. Cl. (3) H.
Erith	Jerman, A. E.* ...	4,892	2,355	1,503	R. M. D. TA. Cl. (2)
Farnworth	Glass, A. G.* ...	3,528	895	1,470	M. D. Cl. (1).
Felling	Peacock, W. E.* ...	5,012	1,412	183	M.
Finchley	Jameson, W. W.* ...	4,395	1,478	830	R. M. D. TA. X. Cl. (3) H.
Hebburn	Norman, E. E.* ...	4,442	1,678	1,078	R. M. Cl. (1).
Hendon	McIntosh, T. S.* ...	5,343	1,850	861	M. TA. Cl. (1) H.
Heston & Isleworth...	Nash, E. H. T.* ...	6,164	1,945	1,668	R. M. D. TA. X. Cl. (3) H.
Hindley	Nisbet, R. K. (temporary).	3,747	1,529	688	R. M. D. TA. Cl. (1).
Ilford... ..	Burton, A. H. G.* ...	9,100	4,072	1,826	R. M. D. TA. X. Cl. (1) H.
Ince-in-Makerfield ...	Fletcher, J. H.* ...	3,665	1,405	32	R. M. Cl. (2).
Kettering	Allison, J.* ...	3,667	1,252	700	R. M. D. X. Cl. (1) H.
Leyton	Taylor, J. F.* ...	17,909	6,492	2,533	R. M. D. TA. X. Cl. (1) H.
Oldbury	Buttery, G. B.* ...	6,215	1,889	40	R. M. D. TA. Cl. (1) H.
Penge	Clark, W. A. ...	2,900	1,157	282	R. M. D. TA. X. Cl. (1).
Radcliffe	Gibson, J. M.* ...	3,025	1,333	705	R. M. D. TA. X. Cl. (1) H.
Rowley Regis	Keith, F. L.* ...	6,566	2,664	1,140	R. M. TA. X. Cl. (3) H.
Shipley	Foster, W.* ...	2,692	1,131	963	R. M. D. TA. Cl. (1) H.
Spenborough	Pick, L.* ...	4,178	1,076	419	R. M. TA. Cl. (1).
Stretford	Walker, E. H.* ...	5,477	1,912	147	R. M. D. TA. Cl. (3).
Swinton & Pendlebury	Mulholland, H. C.*	3,957	1,396	1,494	R. M. TA. Cl. (1) H.
Tipton	Underhill, A. S.* ...	6,075	2,182	67	R. M. D. TA. Cl. (1) H.
Tottenham	Kirkhope, D. C.* ...	22,665	5,774	6,160	R. M. D. TA. X. Cl. (3) H.
Twickenham	Dupont, G. H.* ...	4,340	1,601	1,108	R. M. D. TA. X. Cl. (1) H.
Walthamstow	Clarke, J. J.* ...	20,443	8,824	3,287	R. M. D. TA. X. Cl. (1) H.
Waterloo - with - Sea- forth.	Glover, V. J.* ...	3,941	1,215	282	R. M. D. TA. Cl. (2).
Willesden	Buchan, G. F.* ...	21,377	1,753	6,220	R. M. D. TA. X. Cl. (3) H.
Wolstanton United	White, A.* ...	4,216	1,901	10	R. M. TA. Cl. (3) H.
Wood Green	Porter, W. E.* ...	6,462	1,767	1,166	R. M. D. TA. X. Cl. (2) H.

* See note 2 on page 133.

TABLE I—*continued*.

WALES (URBAN DISTRICTS).

(1)	(2)	(3)	(4)	(5)	(6)
Aberdare	Prichard, J. L.* ...	9,673	3,560	2,217	R. M. D. TA. Cl. (1) H.
Abertillery	Smith, T. B.* ...	6,995	2,555	3,651	R. M. D. Cl. (3).
Barry	Kent, P. W.* ...	6,100	2,515	1,417	R. M. D. TA. X. Cl. (1) H.
Ebbw Vale	Fonseca, F. M.* ...	6,169	2,223	232	R. M. D. TA. Cl. (2).
Mountain Ash	Williams, R. L.* ...	8,257	3,010	1,272	R. M. D. Cl. (1).
Pontypridd	Griffiths, E. J.* ...	8,283	2,977	570	R. M. D. Cl. (1).
Rhondda	Jenkins, J. D.* ...	30,220	13,170	2,057	R. D. Cl. (1).

* See note 2 on page 133.

APPENDIX A—*continued*.

TABLE II.

SUMMARY of some of the PARTICULARS returned in TABLE I.

Type of Area.	No. of Areas.	Average Attendance, 1921-22.	Number of Children inspected during 1922.	
			Routine Inspections.	"Specials."
ENGLAND.				
Counties	49	1,760,777	579,215	122,353
Urban Districts	37	247,778	81,972	47,089
Boroughs	122	455,429	152,601	68,758
County Boroughs	78	1,695,993	557,269	324,732
London	1	615,152	240,143	35,066
Total, England ...	287	4,775,129	1,611,200	597,998
WALES.				
Counties	13	226,706	76,170	5,062
Urban Districts	7	75,697	30,010	11,416
Boroughs	6	21,646	6,756	1,976
County Boroughs	4	81,411	26,986	19,176
Total, Wales ...	30	405,460	139,922	37,630
Total, England and Wales ... }	317	5,180,589	1,751,122	635,628

APPENDIX A—continued.

TABLE III.

STAFF OF THE SCHOOL MEDICAL SERVICE (ELEMENTARY AND HIGHER)
FOR THE YEAR ENDED 31ST MARCH 1923.

(i). TOTAL STAFF.

	Counties.	County Boroughs.	Boroughs.	Urban Districts.	London.	Total.
SCHOOL MEDICAL OFFICERS.						
(i) Whole time to School Medical Service.	2	15	—	1	—	18
(ii) Part time to School Medical Service—						
(a) Residue to Public Health Services.	59	66	80	32	1	238
(b) Part of residue to Public Health Services.	1	—	36	10	—	47
(c) Residue to private practice etc.	—	1	12	1	—	14
Total ...	62	82	128	44	1	317
ASSISTANT SCHOOL MEDICAL OFFICERS.						
(i) Whole time to School Medical Service.	85	125	3	6	47	266
(ii) Part time to School Medical Service—						
(a) Residue to Public Health Services.	146	71	19	18	—	254
(b) Part of residue to Public Health Services.	30	—	—	2	—	32
(c) Residue to private practice, etc.	41	13	16	10	51	131
Total ...	302	209	38	36	98	683
ADDITIONAL PRACTITIONERS employed on specialist duties.	323	241	259	87	252	1,162
Total strength of Medical and Dental Staff.	687	532	425	167	351	2,162
SCHOOL NURSES.						
(i) Whole time to School Medical Service.	99	457	115	75	306	1,052
(ii) Part time to School Medical Service—						
(a) Residue to Public Health Services.	794	165	117	92	—	1,168
(b) Residue to private practice, etc.	9	3	13	—	—	25
(iii) District Nurses employed whole or part time on Health Services (excluding those in (i) and (ii) above.)	1,816	12	—	—	62	1,890
Total ...	2,718	637	245	167	368	4,135

TABLE III—*continued*.

(ii) SPECIALIST STAFF.

		Specially appointed practitioners.						S.M.Os. and A.S.M.Os.					
		Ophthalmic Surgeons.	Dentists.	Aural Surgeons.	Anæsthetists.	X-ray Operators.	Total.	Ophthalmic Surgeons.	Dentists.	Aural Surgeons.	Anæsthetists.	X-ray Operators.	Total.
Counties	... ..	122	109	37	40	15	323	57	—	—	42	2	101
County Boroughs	... ..	62	114	32	15	18	241	74	1	8	42	22	147
Boroughs	... ..	71	114	23	31	20	259	31	—	12	36	5	84
Urban Districts	... ..	30	35	6	8	8	87	12	—	7	16	—	35
London	... ..	45	85	34	72	16	252	—	—	—	—	—	—
Total	... ..	330	457	132	166	77	1,162	174	1	27	136	29	367

APPENDIX A—*continued*.

TABLE IV.

CO-ORDINATION OF SCHOOL MEDICAL SERVICE STAFF WITH OTHER
HEALTH SERVICES.

			Number of Areas in which Staff is		
			Exclusive to S.M.S. (i)	Wholly pooled between S.M.S. and other Public Health Services. (ii)	Partly exclusive and partly pooled. (iii)
Medical Staff <i>only</i>	... ..	...	32	199	86
Nursing Staff <i>only</i>*	... ..	...	160	101	54
Medical <i>and</i> Nursing Staff	... ..	...	26	75	214

* Two L.E.As. had not appointed any Nursing Staff.

APPENDIX B.

PROSECUTIONS BY LOCAL EDUCATION AUTHORITIES.

Reference has been made in previous Reports to cases in which prosecutions have been instituted by Local Education Authorities against parents who had neglected to provide medical treatment for their children, or who had, after repeated warnings, failed to keep their children in a clean condition. A few particulars of such work undertaken during 1922, as elicited from the reports of School Medical Officers, are stated below. The list of Authorities under the various heads must not be taken as complete. Similar proceedings have no doubt been taken elsewhere, but particulars were not at the time of the preparation of this Report in the possession of the Board.

The proceedings taken by Local Education Authorities fall under three main heads, viz. :—

- (a) Prosecutions under the Attendance Byelaws of the Authority;
- (b) Prosecutions under Section 12 of the Children Act, 1908; and
- (c) Prosecutions under Section 122 of the Children Act, 1908.

In addition to the above, prosecutions have been instituted by Local Education Authorities under the Local Education Authorities (Medical Treatment) Act, 1909, against parents who have refused to pay an amount due in respect of the cost of the medical treatment of their children.

It is not proposed to give particulars as in former years of the prosecutions and the fines imposed. In this regard there are no new facts to record.

(a) Prosecutions under the Attendance Byelaws.

In a number of cases where children have been excluded from school on account of verminous conditions or other defects, and no steps have been taken to remedy the defects, the Local Education Authority have taken proceedings against the parents under their Attendance Byelaws, it being assumed that the presentation of a child at school in an unclean or otherwise unfit condition is equivalent to non-attendance at school. It appears that such proceedings have been taken mainly in respect of verminous conditions by the Local Education Authorities for Acton, Boston, Brighton, Cambridge, Carlisle, Carmarthenshire, Devon, Dorset, Kingston-on-Thames, Lincs. Lindsey, Peterborough, Ramsgate, Salop, Shrewsbury, Somerset, Suffolk East, Suffolk West, Tunbridge Wells, Walthamstow, Warrington, Weymouth, Wiltshire, Wimbledon, Wolverhampton, Worthing.

(b) Prosecutions under Section 12 of the Children Act, 1908.

Certain Local Education Authorities have instituted proceedings under Section 12 (1) of the Children Act, 1908, against parents who have persistently neglected their children. Section 89 of the Education Act, 1921, provides that the powers of a Local Education Authority for elementary education shall include a power to prosecute any person under Section 12 of the Children Act, 1908, where the person against whom the offence was committed was a child within the meaning of this Act, and to pay any expenses incidental to the prosecution. Authorities which appear to have taken action under this section of the Children Act, 1908, include Carmarthenshire, Durham County, Hornsey, Kingston-upon-Hull, Warwickshire, Weymouth.

(c) Prosecutions under Section 122 of the Children Act, 1908.

Section 122 of the Children Act gives a Local Education Authority power to examine the person and clothing of any child attending a Public Elementary School, and, if the child is infested with vermin or is in a filthy condition, to require the parent or guardian to cleanse the person and clothing of the child within 24 hours. If the parent or guardian fails to comply with this requirement, the Authority may themselves take steps to have the person and clothing of the child cleansed; and, under Sub-section 4, "where, after the person or clothing of a child has been cleansed by a Local

Education Authority under this section, the parent or guardian of, or other person liable to maintain, the child allows him to get into such a condition that it is again necessary to proceed under this section, the parent, guardian, or other person shall, on summary conviction, be liable to a fine not exceeding ten shillings."

The Authorities which instituted prosecutions during 1922 under this Section include the following:—Bath, Canterbury, Chatham, Coventry, Eastbourne, Hornsey, Kingston-upon-Hull, London, Rutland, Weymouth, Whitehaven, Willesden.

General.

A number of Authorities have acted in conjunction with the National Society for the Prevention of Cruelty to Children by referring cases of neglect to that Society. Proceedings have been instituted by the Society and convictions obtained.

A considerable number of other Local Education Authorities have instituted proceedings against parents for neglect, but the information in the possession of the Board is insufficient to show under which of the above heads, and in some cases under which Act, action was taken. These Authorities include:—Blackburn, Blackpool, Chester, Derby C.B., Ealing, Essex, Gateshead, Hove, Hyde, Ilkeston, Leeds, Leyton, Richmond, Spensborough, Surrey, Taunton, Warwickshire, Yorks (East Riding).

APPENDIX C.

ENGLAND AND WALES: MORTALITY at several AGES from ALL CAUSES and from TUBERCULOUS DISEASES, 1907–1922.†

Cause of Death.	Deaths under 1 Year per 1,000 Births.	Death-rate per 1,000 living.							All Ages.
		1-5	5-10	10-15	15-20	20-25	25-35	35 and up.	
1907: All causes ...	117.62	18.34	3.49	2.06	2.94	3.71	5.03	24.89	15.11
Phthisis ...	0.40	0.30	0.17	0.27	0.88	1.33	1.68	1.74	1.15
Other Forms of Tuberculosis.	4.14	1.67	0.51	0.30	0.25	0.21	0.18	0.17	0.47
1908: All causes ...	120.43	16.81	3.36	2.00	2.81	3.67	4.86	24.08	14.80
Phthisis ...	0.36	0.28	0.16	0.28	0.86	1.35	1.66	1.67	1.12
Other Forms of Tuberculosis.	4.29	1.72	0.50	0.30	0.25	0.21	0.18	0.16	0.47
1909: All causes ...	108.73	16.70	3.43	2.05	2.91	3.63	4.79	24.60	14.62
Phthisis ...	0.29	0.25	0.16	0.28	0.85	1.31	1.61	1.62	1.09
Other Forms of Tuberculosis.	3.71	1.64	0.47	0.32	0.27	0.19	0.19	0.16	0.45
1910: All causes ...	105.44	14.79	3.05	1.91	2.67	3.40	4.41	22.61	13.50
Phthisis ...	0.39	0.27	0.13	0.27	0.80	1.23	1.46	1.51	1.02
Other Forms of Tuberculosis.	3.52	1.49	0.47	0.30	0.25	0.21	0.18	0.15	0.42
1911: All causes ...	130.06	17.41	3.42	2.05	2.88	3.51	4.53	23.13	14.58
Phthisis ...	0.35	0.26	0.16	0.29	0.88	1.30	1.53	1.55	1.06
Other Forms of Tuberculosis.	3.46	1.51	0.48	0.29	0.25	0.18	0.15	0.15	0.41
1912: All causes ...	94.85	14.27	3.06	1.90	2.75	3.28	4.29	23.20	13.35
Phthisis ...	0.23	0.21	0.14	0.26	0.85	1.25	1.46	1.51	1.02
Other Forms of Tuberculosis.	2.58	1.30	0.41	0.28	0.23	0.16	0.14	0.14	0.35

† See note ‡ on page 149.

ENGLAND AND WALES: MORTALITY at several AGES from ALL CAUSES
and from TUBERCULOSIS DISEASES 1907-1922†—*continued.*

Cause of Death.	Deaths under 1 Year per 1,000 Births.	Death-rate per 1,000 living.							
		1-5	5-10	10-15	15-20	20-25	25-35	35 and up.	All Ages.
1913: All causes ...	108.41	14.87	3.15	1.95	2.65	3.26	4.24	23.58	13.79
Phthisis ...	0.25	0.25	0.14	0.29	0.81	1.19	1.40	1.47	0.99
Other Forms of Tuberculosis.	2.77	1.40	0.45	0.27	0.24	0.18	0.13	0.13	0.36
1914: All causes ...	104.62	15.20	3.37	2.11	2.86	3.43	4.44	24.15	13.98
Phthisis ...	0.25	0.22	0.14	0.31	0.87	1.25	1.42	1.53	1.02
Other Forms of Tuberculosis.	2.61	1.27	0.42	0.28	0.22	0.17	0.13	0.12	0.34
1915: All causes ...	109.72	18.56	3.74	2.31	3.33	4.11	4.89	26.18	15.65
Phthisis ...	0.25	0.26	0.16	0.33	1.07	1.58	1.68	1.63	1.14
Other Forms of Tuberculosis.	2.63	1.47	0.45	0.31	0.29	0.21	0.15	0.14	0.38
1916: All causes ...	91.21	12.80	3.13	2.19	15.92*	—	—	—	14.37
Phthisis ...	0.25	0.23	0.18	0.33	1.61*	—	—	—	1.16
Other Forms of Tuberculosis.	2.14	1.33	0.46	0.35	0.18*	—	—	—	0.37
1917: All causes ...	96.48	13.78	3.09	2.13	16.13*	—	—	—	14.45
Phthisis ...	0.30	0.25	0.19	0.38	1.71*	—	—	—	1.23
Other Forms of Tuberculosis.	2.45	1.31	0.49	0.35	0.20*	—	—	—	0.39
1918: All causes ...	97.16	21.18	5.41	3.65	19.14*	—	—	—	17.56
Phthisis ...	0.18	0.25	0.21	0.43	1.83*	—	—	—	1.32
Other Forms of Tuberculosis.	1.76	1.22	0.45	0.34	0.22*	—	—	—	0.37
1919: All causes ...	89.13	12.18	3.38	2.25	14.95*	—	—	—	13.70
Phthisis ...	0.15	0.18	0.13	0.30	1.30*	—	—	—	0.98
Other Forms of Tuberculosis.	1.46	0.97	0.35	0.27	0.17*	—	—	—	0.28
1920: All causes ...	79.93	12.04	3.12	1.93	12.73*	—	—	—	12.39
Phthisis ...	0.15	0.17	0.10	0.24	1.15*	—	—	—	0.87
Other Forms of Tuberculosis	1.32	0.90	0.33	0.25	0.16*	—	—	—	0.26
1921: All causes ...	82.76	10.26	2.64	1.76	12.77*	—	—	—	12.11
Phthisis† ...	0.15	0.14	0.09	0.23	1.18*	—	—	—	0.88
Other Forms of Tuberculosis.	1.39	0.86	0.30	0.21	0.14*	—	—	—	0.25
1922: All causes ...	77.07	12.40	2.45	1.75	13.79*	—	—	—	12.76
Phthisis† ...	0.13	0.17	0.09	0.23	1.18*	—	—	—	0.89
Other Forms of Tuberculosis.	1.26	0.86	0.28	0.21	0.13*	—	—	—	0.23

* Mortality at ages 15 years and upwards, rates for the age-groups above 15 years not being available.

† These figures relate to Tuberculosis of the respiratory system. The deaths included under this heading correspond very closely to those included in this table in earlier years under phthisis.

‡ In order to secure comparability, deaths from acute military tuberculosis, which from 1911 onwards are classed by the Registrar-General under phthisis, have been included throughout under the heading "Other Forms of Tuberculosis." The rates for 1915-18 relate to the civil population only.

APPENDIX D.

STATISTICAL TABLES RELATING TO THE PROVISION OF MEALS.

Introductory Note.

The figures given in the following tables are taken from returns supplied by the Local Education Authorities.

ENGLAND AND WALES.

TABLE I.

TOTAL NUMBER OF AREAS IN WHICH MEALS WERE PROVIDED DURING THE YEAR ENDED 31ST MARCH, 1923.

	Counties.	County Boroughs.	Boroughs.	Urban Districts.	Total.
ENGLAND	12	66	42	23	143
WALES (including Mon- mouth).	2	4	1	5	12
TOTAL	14	70	43	28	155

APPENDIX D—continued.

TABLE II.

NUMBER OF CHILDREN FED, AND OF MEALS PROVIDED, DURING THE YEAR ENDED 31ST MARCH 1923.

LOCAL EDUCATION AUTHORITY.	(1)	Average attendance at Schools in Area, 1921-22.	(2)	Number of individual children fed.	Meals Provided.			(8)	(9)
					Breakfasts.	Dinners.	Other Meals.		
	(1)		(2)	(3)	(4)	(5)	(6)	(7)	
<i>England.</i>									
Counties—									
Cheshire	54,857		370	—	17,222	—	17,222	Yes
Cornwall	35,904		1,858	—	277,532	—	277,532	Yes
Cumberland	25,206		1,372	144,486	206,477	—	350,963	Yes
Durham	134,472		1,955	321,522	319,406	—	640,928	No
Kent	70,861		1,679	23,096	248,582	—	271,678	Yes
Lincs.—Lindsey	34,421		562	—	18,502	—	18,502	No
Shropshire	27,658		247	295	6,313	49	6,657	No
Somerset	41,567		189	—	6,562	—	6,562	No information
Warwickshire*	34,291		—	—	—	—	—	—
Yorkshire—									
East Riding	18,057		No	—	9,601	—	9,601	No
North Riding	38,397		information	163,374	17,999	—	181,373	Yes
London	615,152		1,843	40,392	1,109,171	2,792,482	3,942,045	No
Total	1,130,843		53,134	693,165	2,237,367	2,792,531	5,723,063	—
<i>Wales.</i>									
Counties—									
Brecknockshire	8,955		605	77,742	81,832	42	159,616	Yes
Monmouthshire	46,332		1,900	33,532	251,313	230,268	515,113	Yes
Total	55,287		2,505	111,274	333,145	230,310	674,729	—

TABLE II.—*continued.*

LOCAL EDUCATION AUTHORITY.	Average attendance at Schools in Area, 1921-22.	Number of individual children fed.	Meals Provided.			Days on which Meals were provided during week.	Were Meals provided during School Holidays ?
			Breakfasts.	Dinners.	Other Meals.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>England :—cont.</i>							
County Boroughs : <i>cont.</i>							
Liverpool ...	122,889	5,054	—	476,352	—	476,352	Yes
Manchester ...	104,209	5,809	—	480,804	—	480,804	Yes
Middlesbrough ...	21,854	850	56,451	65,388	—	121,839	Yes
Newcastle - upon - Tyne ...	42,795	4,619	—	415,875	—	415,875	Yes
Northampton ...	12,191	86	8,949	10,344	8,630	27,923	Yes
Nottingham ...	37,287	881	49,787	90,322	—	140,109	Yes
Oldham ...	18,373	339	—	24,249	—	24,249	Yes
Oxford ...	6,734	28	—	964	—	964	No
Portsmouth ...	33,221	1,980	—	195,005	—	195,005	Yes
Preston ...	16,486	950	—	100,985	—	100,985	Yes
Reading ...	12,773	635	—	75,291	—	75,291	Yes
Rochdale ...	11,174	8,203	—	47,004	—	47,004	Yes
Rotherham ...	10,557	26	1,557	—	—	1,557	Yes
St. Helens ...	17,753	521	81,953	126,591	—	208,544	Yes
Salford ...	34,964	548	—	51,466	—	51,466	Yes
Sheffield ...	78,460	3,862	329,766	326,688	127,684	784,138	Yes
Smethwick... ..	11,511	822	—	85,426	—	85,426	Yes
Southampton ...	21,975	514	25,928	42,423	—	68,351	Yes
Southend-on-Sea	9,602	143	—	5,700	2,537	8,237	Yes
Southport ...	6,246	163	—	11,005	—	11,005	No
South Shields ...	20,119	110	—	24,223	—	24,223	Yes
Stockport ...	15,494	229	20,597	24,395	—	44,992	Yes

Stoke-on-Trent ...	40,503	3,359	—	50,546	—	50,546	5	No
Sunderland ...	26,709	2,951	—	691,525	—	691,525	5	Yes
Tynemouth ...	9,922	322	—	21,781	—	21,781	5	No
Wallasey ...	9,407	400	—	17,768	—	17,768	5	Yes
Walsall ...	16,109	11	59	66	—	125	6	Yes
West Bromwich ...	12,042	340	40,989	—	—	40,989	5	Yes
West Ham ...	53,012	1,164	189,711	316,224	—	505,935	7	Yes
West Hartlepool ...	10,679	404	125,352	—	—	125,852	6	No
Wigan ...	12,352	387	—	17,759	—	17,759	5	No
Wolverhampton ...	15,424	357	—	38,884	—	38,884	6	Yes
Worcester ...	6,843	89	—	7,375	—	7,375	6	Yes
York ...	11,717	181	—	32,910	—	32,910	5	Yes
Total ...	1,575,270	77,111	1,735,556	6,820,929	297,306	8,853,791	—	—
<i>Wales.</i>								
County Boroughs—								
Cardiff ...	28,455	650	37,206	87,405	—	124,611	5	Yes
Merthyr Tydfil ...	13,794	728	21,005	29,985	—	50,990	7	Yes
Newport (Mon.) ...	13,624	432	—	65,228	—	65,228	6	Yes
Swansea ...	25,538	375	—	14,620	14,516	29,136	6	Yes
Total ...	81,411	2,185	58,211	197,238	14,516	269,965	—	—
<i>England.</i>								
Boroughs—								
Accrington...	4,868	54	—	1,813	—	1,813	6	Yes
Acton ...	8,057	60	—	3,401	—	3,401	6	Yes
Ashton-under-Lyne ...	5,582	229	11,066	13,785	13,435	38,286	5	No
Brighouse ...	2,433	37	1,054	1,219	74	2,347	6	Yes
Bury St. Edmunds ...	1,934	12	2,700	—	—	2,700	7	Yes
Cambridge ...	6,771	100	—	13,578	—	13,578	5	No
Chatham ...	5,973	111	—	14,826	—	14,826	5	No
Chorley ...	4,276	401	38,658	34,517	—	73,175	5	Yes

TABLE II.—*continued.*

LOCAL EDUCATION AUTHORITY.	Average attendance at Schools in Area, 1921-22.	Number of individual children fed.	Meals Provided.			Days on which Meals were provided during week.	Were Meals provided during School Holidays ?	
			Breakfasts.	Dinners.	Other Meals.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>England:—cont.</i>								
<i>Boroughs: cont.</i>								
Colne ...	2,960	69	2,008	7,464	—	9,472	5	In part
Crewe ...	6,932	105	12,788	—	—	12,788	5	No
Darwen ...	4,410	30	180	—	—	180	5	No
Doncaster ...	7,465	9	—	90	—	90	No information	
Dukinfield ...	2,793	261	—	31,070	—	31,070	5	Yes
Gillingham...	7,087	194	—	12,015	—	12,015	5	No
Gosport ...	4,661	85	—	11,291	—	11,291	6	Yes
Hartlepool ...	3,589	126	9,882	9,961	—	19,843	7	Yes
Heywood ...	3,345	25	—	1,530	—	1,530	6	No
Hyde ...	4,120	337	—	31,963	—	31,963	5	No
Ilkeston ...	5,127	98	10,451	12,897	—	23,348	6	Yes
Jarrow ...	6,821	38	346	369	—	715	6	Yes
Keighley ...	4,490	187	—	9,586	—	9,586	5	Yes
Kidderminster ...	3,665	84	—	5,815	—	5,815	5-6	Yes
Lancaster ...	5,149	391	—	35,978	—	35,978	5	Yes
Leigh ...	6,344	281	—	34,621	—	34,621	6	Yes
Luton ...	7,691	54	2,225	1,986	—	4,211	6	Yes
Macclesfield ...	3,935	302	—	29,833	—	29,833	6	Yes
Middleton ...	3,374	109	18,759	—	—	18,759	5	No
Morley ...	3,007	42	—	1,811	—	1,811	No information	
Mossley ...	1,592	61	—	4,116	—	4,116	5	No
Newcastle - under- Lyme	3,287	42	—	1,764	—	1,764	5	No
Rawtenstall ...	3,260	16	1,106	1,094	1,099	3,299	5	No

Rochester ...	4,059	60	3,365	—	3,365	5	No
Scarborough	3,919	54	1,243	—	1,243	5	No
Stalybridge	3,160	117	6,204	—	12,382	5	Yes
Swindon ...	8,307	41	7,486	—	7,486	7	Yes
Taunton ...	2,807	163	23,103	—	23,103	6	Yes
Todmorden	2,576	28	2,185	—	2,185	5	Yes
Walsend ...	7,456	54	—	—	4,196	6	No
Widnes ...	6,578	4	—	—	40	No information	
Wimbleton	5,588	210	6,800	—	7,690	5	Yes
Winchester	2,616	54	—	—	2,035	5	No
Workington	4,382	128	16,132	15,491	42,629	7	information Yes
Total	196,446	4,863	394,931	33,024	560,578	—	—
<i>Wales.</i>							
Borough—							
Wrexham ...	2,549	243	10,258	—	10,258	7	Yes
Total	2,549	243	10,258	—	10,258	—	—
<i>England.</i>							
Urban Districts—							
Barking Town	6,019	590	47,789	2,836	50,625	5	Yes
Chadderton	4,285	23	407	—	407	5	No
Edmonton	10,745	731	88,985	1,227	90,212	6	Yes
Enfield ...	9,201	390	29,823	307	30,130	6	Yes
Erith ...	4,892	315	27,841	24,522	52,363	6	Yes
Farnworth	3,528	16	481	—	481	5	No
Felling ...	5,012	138	18,141	14,483	32,624	6	Yes
Hebburn ...	4,442	488	63,108	16,655	79,763	6	Yes
Hendon ...	5,343	172	6,934	—	6,934	5	No
Kettering ...	3,667	171	17,167	10,051	27,218	7	Yes
Leyton ...	17,909	589	52,388	—	52,388	6	Yes
Oldbury	6,215	11	45	577	622	No information	
Penge ...	2,900	33	256	—	256	5	No
Radcliffe ...	3,025	108	10,408	10,408	20,816	5	Yes

TABLE II.—*continued.*

LOCAL EDUCATION AUTHORITY.	Average attendance at Schools in Area, 1921-22.	Number of individual children fed.	Meals Provided.			Days on which meals were provided during week.	Were Meals provided during School Holidays?
			Breakfasts.	Dinners.	Other Meals.	Total Number of Meals.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>England:—cont.</i>							
<i>Urban Districts: cont.</i>							
Rowley Regis ...	6,566	129	14,314	—	—	14,314	No information
Shipley ...	2,692	33	—	5,416	—	5,416	No
Stretford ...	5,477	39	—	1,696	—	1,696	Yes
Swinton & Pendle- bury	3,957	109	13,245	12,836	—	26,081	Yes
Tipton ...	6,075	639	11,876	9,705	128	21,709	Yes
Tottenham ...	22,665	1,300	—	142,536	—	142,536	Yes
Walthamstow ...	20,443	547	—	53,846	977	54,823	Yes
Willesden ...	21,377	1,459	10,835	113,941	—	124,776	Yes
Wood Green ...	6,462	406	—	32,388	—	32,388	Yes
Total	182,897	8,436	131,336	736,137	1,105	868,578	—
<i>Wales.</i>							
<i>Urban Districts:—</i>							
Aberdare ...	9,673	86	4,791	6,006	—	10,797	Yes
Abertillery ...	6,995	574	18,581	81,873	60,236	160,690	Yes
Barry ...	6,100	303	—	24,431	—	24,431	Yes
Ebbw Vale ...	6,169	129	2,317	1,785	654	4,756	Yes
Rhondda ...	30,220	17	30	—	24	54	Yes
Total	59,157	1,109	25,719	114,095	60,914	200,728	—
Grand Total	3,283,860	149,586	2,887,884	10,844,100	3,429,706	17,161,690	—

APPENDIX D—continued.

TABLE III.

PARTICULARS AS TO COST OF MEALS AND OF CHILDREN PROVIDED WITH MEALS FOR PAYMENT.

Local Education Authority. (1)	Cost per Meal.		Number of Children for whom Meals were Provided.	
	Average Total Cost. (2)	Average Cost For Food only. (3)	For Full Payment. (4)	For Part Payment. (5)
<i>England.</i>				
Counties—	d.	d.		
Cheshire*	5.02	3.62	—	8
Cornwall	3.74	2.35	3	—
Cumberland*	2.0	1.75	72	—
Durham*	{ Breakfast 3.0 Dinner 4.0	{ Breakfast 3.0 Dinner 4.0	—	—
Kent*	3.4	1.8	1,138	—
Lincs.—Lindsey	6.6	No information	—	—
Shropshire*	3.5	3.5	—	—
Somersetshire*	3.55	2.12	11	—
Yorkshire, East Riding	1.6	No information	—	—
Yorkshire, North Riding*	2.85	2.73	—	2
London*	2.6	1.9	17,745	No information
<i>Wales.</i>				
Counties—				
Brecknockshire * ...	2.6	2.4	6	—
Monmouthshire* ...	3.4	3.0	—	—
<i>England.</i>				
County Boroughs—				
Barnsley*	2.2	2.2	—	—
Barrow-in-Furness* ...	3.14	{ Dinner 3.0 Breakfast 1.5 }	7	—
Bath*	2.7	1.7	—	272
Birkenhead*	4.13	2.02	—	—
Birmingham*	5.6	2.8	14	—
Blackburn*	12.03	5.78	224	179
Bolton	5.12	2.85	—	—
Bootle*	3.5	2.2	—	—
Bournemouth	8.0	No information	—	—
Bradford*	7.71	3.31	234	351
Brighton	5.32	4.0	—	—
Bristol	6.6	3.0	—	—
Burnley*	7.32	6.25	—	—
Bury	6.84	No information	—	—
Canterbury	2.58	2.53	3	1
Carlisle	2.0–2.5	2.0–2.5	—	8

* Indicates areas having arrangements for the feeding of children whose parents are in receipt of relief from the Poor Law Guardians.

TABLE III.—*continued.*

Local Education Authority. (1)	Cost per Meal.		Number of Children for whom Meals were Pro- vided.	
	Average Total Cost. (2)	Average Cost For Food only. (3)	For Full Payment. (4)	For Part Payment. (5)
<i>England: cont.</i>				
County Boroughs: <i>cont.</i>	d.	d.		
Chester*	7.0	No information	—	—
Coventry*	6.38	5.72	36	—
Croydon*	5.71	4.51	77	146
Darlington	2.5	1.45	—	—
Derby*	6.1	5.25	—	—
Dudley*	1.6	1.6	—	—
East Ham*	6.61	4.16	9	10
Gateshead	4.4	4.1	—	—
Grimsby	8.0 at Coffee Hall 7.0 at School Centre	8.0 at Coffee Hall 7.0 at School Centre	—	—
Halifax	3.24	1.81	Information	not available
Hastings	6.83	No information	—	—
Huddersfield*	5.75	No. information	—	—
Ipswich	5.0	No information	—	—
Kingston-upon-Hull* ...	5.6	2.4	—	2
Leeds*	4.42	3.4	6	—
Leicester	14.0	No information	—	—
Liverpool	3.52	2.05	—	—
Manchester*	4.18	1.89	39	—
Middlesbrough	3.5	2.25	—	—
Newcastle-upon-Tyne ...	3.58	1.68	—	29
Northampton*	5.96	1.59	—	8
Nottingham*	4.18	2.47	52	62
Oldham*	5.2	2.1	—	—
Oxford	7.0	7.0	—	—
Portsmouth*	5.66	4.34	—	—
Preston	2.77	2.03	—	—
Reading	6.2	2.0	—	—
Rochdale*	4.0	4.0	—	—
Rotherham*	4.7	3.3	—	—
St. Helens*	2.59	2.25	139	—
Salford	7.06	1.78	—	6
Sheffield*	3.0	2.38	—	16
Smethwick*	3.47	2.35	—	22
Southampton*	4.85	2.54	—	—
Southend-on-Sea	Dinners 7.0 Teas 5.0	Dinners 7.0 Teas 5.0	—	—
Southport*	4.7	4.0	—	—

* Indicates areas having arrangements for the feeding of children whose parents are in receipt of relief from the Poor Law Guardians.

TABLE III.—*continued.*

Local Education Authority. (1)	Cost per Meal.		Number of Children for whom Meals were Pro- vided.	
	Average Total Cost. (2)	Average Cost For Food only. (3)	For Full Payment. (4)	For Part Payment. (5)
<i>England: cont.</i>	d.	d.		
County Boroughs: <i>cont.</i>				
South Shields	6.0	6.0	—	—
Stockport	4.57	2.42	—	—
Stoke-on-Trent	5.0	3.0	—	—
Sunderland*	2.7	2.45	—	—
Tynemouth	5.3	5.0	1	3
Wallasey	4.21	3.94	—	—
Walsall	No information		—	—
West Bromwich*	3.2	2.1	—	—
West Ham*	4.34	2.03	13	—
West Hartlepool*	3.8	3.75	—	68
Wigan	2.7	0.95	—	—
Wolverhampton*	10.07	2.42	—	52
Worcester	7.7	No information	—	—
York*	4.1	2.7	—	6
<i>Wales.</i>				
County Boroughs—				
Cardiff*	5.82	5.82	—	—
Merthyr Tydfil... ..	No information		—	—
Newport (Mon.)*	4.14	2.94	31	63
Swansea	7.1	4.74	—	—
<i>England.</i>				
Boroughs—				
Accrington	6.2	6.0	—	—
Acton	6.52	5.62	7	6
Ashton-under-Lyne	4.5	2.3	—	—
Brighouse*	9.06	7.01	—	—
Bury St. Edmunds	4.0	4.0	—	—
Cambridge*	7.0	4.0	—	15
Chatham*	3.03	2.7	—	—
Chorley	6.0	2.1	16	—
Colne	6.0	6.0	—	—
Crewe	6.0	5.5	—	—
Darwen	2.0	No information	—	—
Doncaster	6.0	6.0	—	—
Dukinfield*	4.19	2.3	—	—
Gillingham	5.88	4.5	1	—
Gosport*	6.5	No information	—	25
Hartlepool	5.61	5.01	—	—

* Indicates areas having arrangements for the feeding of children whose parents are in receipt of relief from the Poor Law Guardians.

TABLE III.—*continued.*

Local Education Authority. (1)	Cost per Meal.		Number of Children for whom Meals were Pro- vided.	
	Average Total Cost. (2)	Average Cost For Food only. (3)	For Full Payment. (4)	For Part Payment. (5)
<i>England : cont.</i>	d.	d.		
Boroughs: <i>cont.</i>				
Heywood	6.0	No information	—	—
Hyde*	3.5	2.36	—	—
Ilkeston*	4.45	2.37	—	—
Jarrow	5.58	4.54	—	—
Keighley*	8.0	6.5	1	—
Kidderminster* {	From 1.4.22 to 24.11.22 = 8.0	From 1.4.22 to 24.11.22 No information	}	}
	From 26.11.22 = 4.0	From 26.11.22 = 4.0		
Lancaster*	3.83	3.19	—	—
Leigh*	5.1	3.5(est.)	—	1
Luton	6.8	3.1	—	—
Macclesfield*	5.2	2.6	65	51
Middleton	1.97	1.97	—	—
Morley	5.0	No information	—	—
Mossley*	2.7	2.7	2	—
Newcastle-under-Lyme*	4.09	3.9	—	—
Rawtenstall	4.73	4.66	—	—
Rochester*	6.0	6.0	—	—
Scarborough	6.0	No information	—	—
Stalybridge	7.0	7.0	—	—
Swindon*	3.0	3.0	—	—
Taunton*	4.58	1.96	—	—
Todmorden*	9.4	6.8	—	—
Wallsend	3.0	3.0	—	—
Widnes	6.0	6.0	—	—
Wimbledon	6.5	6.5	—	—
Winchester	1.0	1.0	—	—
Workington*	3.84	2.64	1	—
<i>Wales.</i>				
Borough—				
Wrexham*	2.72	1.68	—	—
<i>England.</i>				
Urban Districts—				
Barking Town* {	7.15	Breakfast 2.9 Dinner 6.25	}	}

* Indicates areas having arrangements for the feeding of children whose parents are in receipt of relief from the Poor Law Guardians.

TABLE III.—*continued.*

Local Education Authority. (1)	Cost per Meal.		Number of Children for whom Meals were Pro- vided.	
	Average Total Cost. (2)	Average Cost For Food only. (3)	For Full Payment. (4)	For Part Payment. (5)
<i>England: cont.</i>	d.	d.		
Urban Districts: <i>cont.</i>				
Chadderton*	7.42	7.42	—	—
Edmonton*	5.11	2.56	—	—
Enfield	7.9	2.9	—	—
Erith*	8.0	7.75	—	—
Farnworth*	8.0	No	—	—
		information		
Felling*... ..	{ Breakfast 2.5 Dinner 4.25	{ Breakfast 2.5 Dinner 4.0	{ — —	{ — —
Hebburn*	2.35	1.59	—	—
Hendon*	4.5	2.8	—	—
Kettering	4.7	2.7	11	—
Leyton*... ..	5.43	2.62	1	7
Oldbury	No information	—	—	—
Penge	5.5	2.5	—	—
Radcliffe	5.53	5.51	—	—
Rowley Regis	2.7	2.7	—	—
Shipley*	9.0	7.75	—	6
Stretford*	4.5	No	—	—
		information		
Swinton and Pendlebury	6.8	5.15	—	—
Tipton*	2.0	1.5	—	—
Tottenham*	7.29	5.17	56	36
Walthamstow*	5.85	2.89	—	—
Willesden*	5.72	1.98	472	—
Wood Green*	6.8	3.6	—	86
<i>Wales.</i>				
Urban Districts—				
Aberdare	2.69	2.51	—	—
Abertillery*	3.81	2.42	—	—
Barry	4.0	3.5	—	—
Ebbw Vale	3.7	3.3	—	—
Rhondda*	1.8	1.8	—	—

* Indicates areas having arrangements for the feeding of children whose parents are in receipt of relief from the Poor Law Guardians.

(Continued from p. 2 of cover.)

RECENT ADVANCES IN MEDICAL EDUCATION IN ENGLAND

BY

SIR GEORGE NEWMAN, K.C.B., M.D., Hon.D.C.L., F.R.C.P.

1s. 3d. (1s. 6d.).

"It can have happened seldom that so clear an exposition of the difficulties of a practising doctor . . . has been presented to the public."—*Times*.

"A romance of medicine."—*Observer*.

"A document of much importance."—*British Medical Journal*.

MEDICAL RESEARCH COUNCIL.

REPORT FOR THE YEAR, 1920-21. 3s. 6d. (3s. 8½d.).

Special Report Series :—

No. 10.—THE MORTALITIES OF BIRTH, INFANCY, AND CHILDHOOD. 1s. 6d. (1s. 8d.).

No. 20.—A STUDY OF SOCIAL AND ECONOMIC FACTORS IN THE CAUSATION OF RICKETS, WITH AN INTRODUCTORY HISTORICAL SURVEY. 2s. (2s. 2d.).

No. 38.—REPORT ON THE PRESENT STATE OF KNOWLEDGE CONCERNING ACCESSORY FOOD FACTORS (VITAMINES). 4s. (4s. 3d.).

No. 49.—ON THE DESTRUCTION OF BACTERIA IN MILK BY ELECTRICITY. 9d. (10½d.).

No. 61.—EXPERIMENTAL RICKETS. (*Illustrated*.) 4s. (4s. 3d.).

No. 68.—RICKETS. The Relative Importance of Environment and Diet as Factors of Causation : an investigation in London. 2s. 6d. (2s. 8d.).

No. 71.—AETIOLOGY AND PATHOLOGY OF RICKETS from an Experimental point of view. 4s. (4s. 3½d.).

No. 74.—RELATION BETWEEN HOME CONDITIONS AND THE INTELLIGENCE OF SCHOOL CHILDREN. 1s. (1s. 1½d.).

No. 77.—RICKETS. Studies of, in Vienna, 1919-22. Report to the Accessory Food Factors Committee appointed jointly by the Medical Research Council and the Lister Institute. (*Illustrated*.) 7s. 6d. (7s. 10½d.).

REC'D BY.....

FOR THE DOCTOR'S BOOK-SHELF

FEB-20 1921

REF'D TO.....

Selection from the Volumes

forming part of the

ACK'D BY.....

Medical History of the War.

FILE.....

HYGIENE OF THE WAR. VOL. I.

Sanitary Organisation in the Field—Water Supply in France, Belgium, Egypt, Palestine, Mesopotamia, &c.—Housing and Clothing of the Soldier, &c.... 21s. net.

HYGIENE OF THE WAR. VOL. II.

Food Rations in the United Kingdom—Prevention of Food Deficiency Disease—Prevention of Malaria, Small Pox, Plague, &c. 21s. net.

DISEASES OF THE WAR. VOL. I.

Enteric Group of Fevers—Dysentery—Cholera—Typhus—Influenza—Purulent Bronchitis 21s. net.

DISEASES OF THE WAR. VOL. II.

Neurasthenia—Skin Diseases—Venereal Diseases—Medical Aspects of Aviation—Gas Warfare, Protective Measures—Gas Casualties, Symptoms and Treatment—Medical Problems in Tanks and Mine Warfare, &c. 25s. net.

SURGERY OF THE WAR. VOL. I.

Front-line Surgery and Wound Treatment generally. 25s. net.

SURGERY OF THE WAR. VOL. II.

Injuries to the Face and Special Parts of the Body. 25s. net.

PATHOLOGY.

The final volume of the series dealing with the Diseases, Surgery and Hygiene of the War 21s. net.

Uniformly bound in green cloth, gilt. Fully illustrated with diagrams, half-tone and (in some cases) coloured plates. Many of the most eminent physicians and surgeons have contributed.

(Postage extra on each volume, 9d.)